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LECTURE II.*

Delivered on May 3rd, 1928.

CUTANEOUS ŒSOPHAGEAL REFLEXES AND COUNTER-IRRITATION.

HAVING dealt in the first lecture with the physiological mechanisms by which pain is produced, it is of interest to consider next how these may be affected by cutaneous stimulation, especially as counter-irritation has been employed from time immemorial in the relief of internal pain. The type of stimulation that Payne and I used [34] consisted in applying a turpentine stupe or mustard leaf plaster over the sternum, or rubbing with a pungent liniment such as lin. camph. ammon. B.P., or rubbing the skin with cotton-wool, a dry sponge, or the bare hand; but the actual method of stimulation does not appear to be important, since as marked results were obtained when the sternum was rubbed with cotton-wool or the bare hand as when a pungent liniment or a turpentine stupe was applied. At first bags were used which contained 10–30 c.cm. of air, amounts sufficient in some cases to produce vigorous activity on the part of the œsophagus, but not enough to cause actual pain. We found that the œsophagus became more active when the subject did the rubbing himself, and once or twice when the attention wandered and the experiment was forgotten rather unusual activity was also noticed. Increased activity was indicated by increased frequency and height of contraction and by a simultaneous rise in tonus, while with great activity large multiple contractions were seen.

The activity of the œsophagus depended to some extent on its activity immediately preceding the experiment. When the œsophagus was quiet, as was usually the case when there was but little air in the bag, stimulation caused immediate activity which tended to die down after stimulation or during the stimulation itself if this was prolonged. There was nothing specific in the type of activity caused by rubbing. In fact, a tracing might be obtained showing activity similar in all respects to what had been observed previously and for which there was no obvious cause.

When the œsophagus was already active stimulation sometimes caused a decrease in its activity. At other times the activity might remain unaltered and the type of contraction alone might be changed, but in this case the stimulation usually caused the activity to disappear in the end. In three out of the 17 experiments there was no obvious change in the tracing.

The effect of rubbing over the sternum in the case of a medical student inclined to attacks of indigestion is shown in Fig. 9 (A). The bag only contained 15 c.cm. but the œsophagus was rather active, since he had just been through an experiment with 40 c.cm. in the bag. The effect of rubbing was to cause a decrease in activity, so that only respiratory variations were shown. A wave was seen immediately the rubbing was stopped, which is rather a common occurrence; but otherwise the œsophagus remained absolutely quiet. Fig. 10 shows the effect of rubbing in my own case, when a bag in the lower œsophagus contained 30 c.cm. air. This was enough to produce considerable activity though no pain, and the movements of the œsophagus shown in the first part of the tracing resemble those of the same subject in Fig. 1. Rubbing took place between the arrows, and was sufficiently severe to cause tingling between X and X. The effect of the rubbing was to change a fairly uniform tracing into one showing marked periodicity, so that it resembled to some extent that of an irregular Cheyne-Stokes breathing. After successive periods of waxing and waning there were no œsophageal movements at all for a period of 39 sec. Then movement began again, accompanied by a slight recrudescence of the tingling at Y.

The same kind of result was obtained during proper counter-irritation—i.e., when the bag contained enough air to cause pain. Such a tracing in my own case is shown in Fig. 9 (B) with 40 c.cm. in the bag and with its end 12 inches below the teeth. Rubbing for 98 sec. took place between the arrows. Continuous retrosternal pain was felt before rubbing, and this disappeared during the rubbing and for some time afterwards; in fact, the rubbing felt "comforting." In this case the first effect of rubbing was to cause waning of the movements followed by a large multiple contraction, then a further diminution; but the interesting point about this tracing was that the diastolic pressure definitely fell. Thus before rubbing the lowest pressure was 20 cm. At the first period of waning it was 18 cm.; but the lowest value—viz., 13·5 cm.—was reached a few seconds after the rubbing was ended. As in Fig. 10, there was a completely quiescent period, in this case of 29 sec.

The fall of diastolic pressure and consequently of tonus provides the obvious explanation why rubbing made the pain less, since it means that the posture of the œsophagus had temporarily increased, and the tension on the pain-endings had fallen; but the other method of relieving pain is also shown in Fig. 9 (B), since there was an increase in the number of the contractions between the periods of waning, so that during this phase, too, the pain was less because the contracting muscle itself bore the strain instead of the pain-endings. This factor is exemplified in the large multiple contraction that occurred toward the end of rubbing, and the numerous small contractions after the rubbing was over. Hence it would appear that the pain is relieved by rubbing because the latter tends to produce an irregular Cheyne-Stokes-like type of rhythm. However, Fig. 9 (C) shows an experiment on myself where rubbing, again shown between the arrows, produced no lessening of the activity at all. In fact, the œsophagus became more active during rubbing, while the end of the tracing was very similar to the beginning. Pain is shown by descent of the lever, and during the activity the pain is obviously less, and particularly so during the rubbing; but pain came back immediately afterwards, because presumably the usual fall in tonus which, when present, persists for some time after the counter-irritation failed to appear.

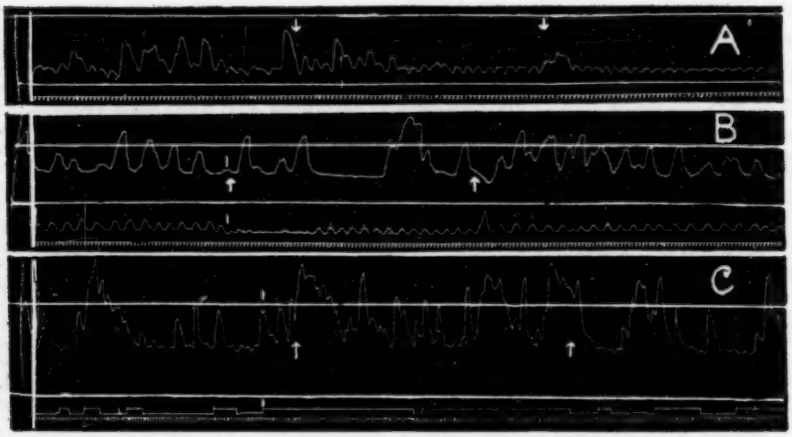
What was the reason of this failure? It would appear to be due to the previous activity of the œsophagus. Thus in Fig. 9 (C), where the diastolic pressure actually rose, observations on the œsophagus had been carried out for 29 min. continuously before the counter-irritation experiment was undertaken. It has already been pointed out that the œsophagus tends to adapt itself to the presence of a bag by increasing its posture, and if at the end of the 29 min. stimulation by a bag the posture has reached its maximum value it is clear that no further increase can take place with rubbing. In Fig. 9 (B) the counter-irritation took place after the bag had been in situ for only 7 min., and it is interesting to note that when this experiment was repeated 15 to 20 min. later the fall of diastolic pressure was only 1·3 cm. instead of 6·5 shown in Fig. 9 (B).

In all we carried out seven experiments on counter-irritation which were successful in relieving pain. It was found that in five there was a fall in diastolic pressure, while in four there was some time or other an increase in the contractions. However, in one experiment neither of these features was present, so that our theory does not provide a complete explanation

* Lecture I. appeared in THE LANCET of Dec. 15th.

of relief of pain by counter-irritation, nor does it explain why it occurred at the beginning of counter-irritation before the fall in diastolic pressure had time to take place. There must be a third factor, and this is probably psychological. The mere sensation of the skin being rubbed hard by a muscular hand must divert the attention from the œsophageal pain felt deeply to the sensations felt on the skin itself, and so consciousness of the deep pain would be lost.

FIG. 9.



Œsophageal tracings in three experiments. Horizontal lines 0 and 40 cm. Rubbing over sternum between the arrows. Descent of lever indicates pain.

But it is not necessary to confine the rubbing to the overlying skin in order to obtain an effect on the œsophagus. In a number of experiments the skin was rubbed at a distance, and in Fig. 11, with 10 c.cm. air in the bag and W. W. P. the subject, rubbing the right calf with cotton-wool caused immediate activity with a slight increase of diastolic pressure to begin with, while during the rubbing the bag produced a noticeable sensation in the throat.

When the skin over the sternum is rubbed activity of the œsophagus takes place presumably from reflex action; but is the effect on the œsophagus of rubbing the calf of the leg also an example of a reflex from a distance? Probably more than a mere reflex is involved, particularly when the rubbing is prolonged. Thus my colleague, W. W. P., has pointed out, what must be a familar fact to many, that the violent scratching of an urticarial wheal, for example, may after the local itching has stopped, produce an increase of pulse-rate, feeling of exhaustion and dizziness in the head, breathlessness, with a sinking feeling in the stomach—various symptoms which can be explained if a considerable dose of a histamine-like substance has been liberated into the system by the rubbing.

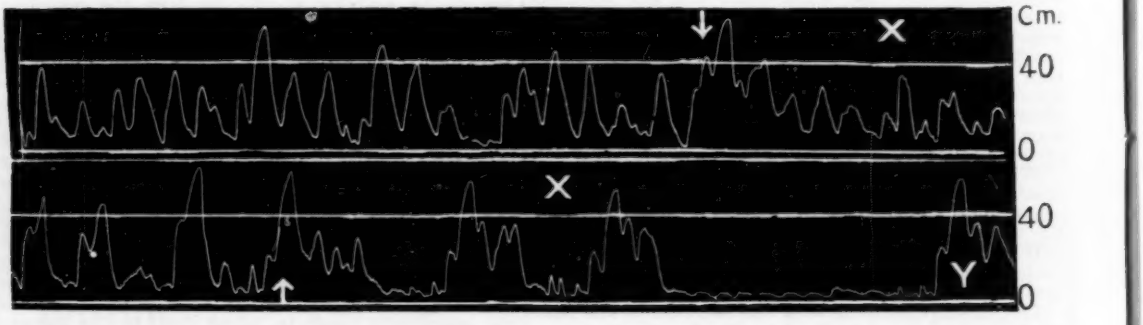
Our experiments on counter-irritation suggest a comparison with the mass reflex described by Head and Riddoch [35] in patients with complete division of the spinal cord in the dorsal region in whom rubbing the skin of the lower limbs caused evacuation of the bladder with forced movements of the legs, &c. Danielopolu, Radovici, and Carniol [36] have published tracings of large single contractions of the bladder which followed stimulation of the skin in a patient suffering from spastic paraplegia due to syphilitic disease of the spinal cord. From our experiments on normals it is clear that the results are not so stereotyped as in the mass reflex, since they depend on such conditions as attention, length of previous stimulation, &c. The main difference, however, would appear to be that in the normal cutaneous stimulation does not invariably cause a big single contraction. Very often there is an increase of the small contractions with rise of systolic and diastolic pressure, whereas where the tonus is high enough to cause pain we get this curious Cheyne-Stokes-like activity that has already been described.

SENSATION OF NAUSEA.

It is curious that on questioning various people there should be no very decided agreement as to exactly what sensation the term nausea or feeling of sickness should be applied. I asked one of my sons aged 9, where it was he felt sick, and he replied at once "in my throat"; and to Payne and myself this sensation felt in the back and lower part of the throat is so characteristic and localised that we have limited the term nausea to it. It is true that this sensation is often associated with a feeling in the pit of the stomach to which the term "sensation of sinking" or "emptiness" may be given, or with a frontal headache or with globus; but in any investigation of the subject it is essential to be precise as to the locality as well as to the quality of any particular sensation that I have stressed the actual connotation of these various terms in these lectures.

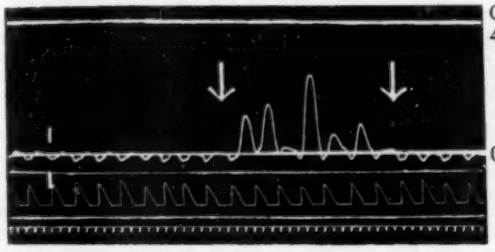
Our earliest investigations of nausea came about rather by chance. An experiment had been carried out on myself in which a bag containing 40 c.cm. of

FIG. 10.



air had been kept in the œsophagus for six minutes and had eventually caused much retching and been vomited. The bag was swallowed again and the volume of air was gradually increased from 10 c.cm. up to 30 c.cm. The activity, as shown in Fig. 12 (A), was moderate and alternated with periods of complete quiet. During one of the periods of activity a sensation of nausea lasting not much more than one second was signalled repeatedly, and was found to occur

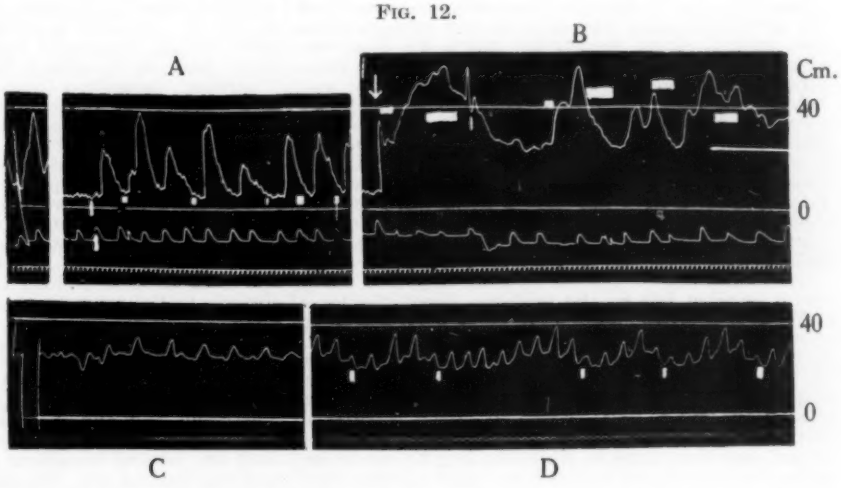
FIG. 11.



during the relaxation phase of one of these peristaltic contractions, as shown by the white rectangles beneath the tracing. The air in the bag was then suddenly increased up to 40 c.cm., as shown in Fig. 12 (B). Both nausea, shown by the rectangles above the tracing, and pain in the throat, shown by the rectangles below the tracing, were signalled. The subject noted that there was a gradual transition of the sensation from nausea through a painful nausea to pain in the throat alone so that the sensations were really mixed, nausea or pain predominating as the case might be. Eventually pain in the throat was felt alone, though it proved rather difficult to determine the exact spot at which the element of nausea in the sensation had come to an end. Three minutes later the pain in the throat disappeared and pain behind the sternum was felt alone; but there was no obvious alteration in the tracing at this time. A patient once described this throat pain to me as rasping, which I think is an apt simile. The appearance of nausea during peristaltic relaxation would suggest that the mechanism of its production is essentially the same as that of visceral pain, but that there is some specific sense organ that reacts to a lower degree of tension than the pain-fibres, and occasionally both may be stimulated at the same time; but eventually, as elsewhere, pain is the over-riding sensation. The relation of nausea to pain in the throat is thus similar to the relation of touch to pin-prick on the skin, or of pressure to painful pressure on skeletal muscle. There is another point of interest. The sensations of nausea and pain in the throat in this experiment must have been sensations referred from the œsophageal excitation, for the bag was a good deal below the position where the sensation was felt. In fact, it would have been impossible to have retained it in the throat. We did find that the sensation of nausea was more readily produced the higher the bag was situated in the œsophagus. In this connexion it is interesting that Boring[33] found that œsophageal stimulation tended to cause sensory effects at particular places, and he noted in one case that there was no visceral sensation between the upper part of the sternum and the throat; it was from the point of view of internal sensation, as if the neck was missing. No doubt people vary, since a medical student (N. I. K.), examined by Ride and myself, noticed nausea as low as the thyroid.

The sensation of nausea in our experiments was also described as a sensation of sinking in the throat, and if it is due to a slight tension exerted on specific end-organs in the œsophagus, it is to be expected that other means of producing this increase will also elicit the sensation. In this connexion I have a vivid recollection, while standing on board ship during a rough channel crossing, of feeling nausea at each descent of the ship while it disappeared completely during the ascent. I did not at the time analyse my feelings sufficiently in detail to determine the exact moment during the descent at which the sensation was felt; but Dr. G. H. Oriel informs me, both from his experience of transatlantic liners and of American elevators, that it is during the retardation towards the bottom of the descent that the sensation is experienced. This fits in quite well with the views just described, because the effect of this retardation on the elastic œsophagus which is suspended on a rigid framework—viz., the skull and vertebral column and bones of the lower limbs—would be to increase its tension in a longitudinal direction. A similar increase of tension would occur during the acceleration upwards at the beginning of the ascent, and I am informed that according to experience in quick lifts the ascent is a more potent cause of sickness than the descent. It should be mentioned that a peculiar sensation is often observed during the acceleration at the beginning of the descent as if the viscera were being left behind up above; but Dr. Oriel is convinced that this sensation is not the same thing as nausea.

FIG. 12.



SENSATION OF SINKING OR EMPTINESS.

This was investigated by means of a rubber catheter which was passed into the cardiac end of the stomach and connected with a bellows so that air could be forced in rapidly. A rubber bag was also introduced into the stomach, and Fig. 12 (C D) gives the tracing from the bag. Between C and D 200 c.cm. were introduced into the stomach, and the effect was to produce a slight periodic rise and fall in the tracing, while the sensation of sinking of less than a second's duration is again recorded during the relaxation, but very near the lowest part of the tracing. At the

same time the subject, W. W. P., felt what he at first described as a desire to eructate. The feeling was as if there was some wind there which might come up, although it did not. Further analysis of the sensation leaves no doubt that it was felt behind the upper end of the sternum, and that it was identical with what has commonly received the appellation of "sensation of globus."

The rise and fall of the lever had quite a short periodicity, the intervals varying from 9 to 25 sec. with an average of 16. The time intervals were much too short for these changes to be considered as tonus variations. They must have been gastric peristalses, which might have originated in the cardiac part of the stomach, or perhaps were due to peristalsis occurring lower down, the pressure effects being conducted to the cardiac end of the stomach. At any rate, it is clear that the sinking sensation falls into line with that of nausea, and again may be considered as due to a slight rise of tonus, of the stomach wall this time, sufficient to cause tension on specific nerve end-organs, but not enough to cause pain. As is the case with nausea, the peristaltic contraction causes the disappearance of the sensation. It might be argued from Fig. 12 (D) that actually there was no increase of tonus, since the diastolic pressure was actually lower than before the air was introduced. However, the mere introduction of air with the consequent increase in the diameter of the stomach will itself increase the tonus, even though the pressure may fall. This is shown by the formula $T=pr$. In other instances where sinking was signalled the diastolic pressure was increased.

There are two observations which have a bearing on this question of the sensation of sinking. My colleague, W. W. P., has noticed that the sensation may be diminished by standing upright with the abdominal muscles braced. This would increase the intra-abdominal pressure and support the stomach wall, reducing the stretch by neutralising the intragastric pressure. A. E. Barclay[37] has made an observation in the opposite sense, since he found that the normal stomach may drop an inch or more when the patient smelt something which to him was nauseating, such as asafœtida. This sudden dropping must, I consider, be due to the abdominal wall being suddenly relaxed, and the result would be an increased tension on the structures in the stomach wall, which would cause the sensation of sinking. Evidently the relaxation of the abdominal wall may be so great that the venous return from the abdomen may be interfered with, since Barclay has observed that the patient has fainted a few seconds after the lower border of the stomach dropped by several inches.

The sensation of globus is a feeling of a lump which is often felt in the mid-line about the level of the clavicle, but my colleague has noted a similar sensation lower down behind the xiphisternum, particularly after a big dinner which "lies heavily on the chest." In our experiments globus has been frequently produced at the same time as the sensation of sinking, and the following experiment illustrates its production reflexly. In this case the catheter was passed into the stomach, while the bag to act as an indicator was placed in the lower part of the œsophagus, with its end about 15½ inches below the teeth. At first a level tracing was obtained showing respiratory waves and one rather larger wave which was probably a local contraction. Then 600 c.cm. of air was introduced through the catheter into the stomach, as described in the last experiment, which had been carried out just previously. The result was to cause a series of large contractions to pass down the œsophagus due to secondary peristalsis. The sensations of sinking and of globus were felt and recorded near the bottom of the depressions between the contractions. Hence the result of blowing up the stomach was not only to cause contractions in this organ, but reflexly to produce simultaneous contractions in the œsophagus, since in both experiments the sensations of sinking and of globus were recorded between the contractions, and near the lowest points of the tracings. My colleague finds that in naturally occurring globus sensations an increase takes place during a deep inspiration, which would tend still more to stretch the œsophageal wall.

We have already given the name "gastro-œsophageal anti-regurgitation reflex" to the effect on the œsophagus of blowing up the stomach; but we have now found that it varies according to the condition of the œsophagus at the time it is elicited. In one experiment a catheter led to the stomach while the indicator bag in the œsophagus at first contained 50 c.cm. of air, enough to produce continuous pain and to prevent any contractions at all getting past the bag. The amount was then reduced and the first part of the tracing showed a continuous series of large contractions with pain felt during each relaxation. Then 600 c.cm. of air were forced into the stomach. This caused a complete upset in the rhythm of the œsophagus with disappearance of the large contractions, and there was also an immediate relief from the œsophageal pain. What happened was that the sudden increase of tension on the nerve-endings during muscular relaxation disappeared, and the steady tension during diastole which now remained was itself not enough to affect consciousness. This is, I think, a more likely explanation than that suggested previously[34] for the relief of pain in this type of experiment.

From the psychological point of view it is interesting to note that our experiments have suggested a specific type of sensation in three different parts of the upper alimentary tract. There is nausea felt in the throat, there is globus which is felt situated deeply at various levels behind the sternum, and there is a sinking or empty sensation felt in the epigastrium and due to the stomach. There are presumably special end-organs for these sensations; but as the stimulus increases these sensations give place to pain at all points.

The relation between these various sensations is well illustrated by a recent experience of my colleague W. W. P. He had a severe attack of indigestion after eating gooseberry tart at night. During the worst part of the attack there was a fairly intense "burning" sensation located very definitely at the level of the clavicles, relieved by swallowing. During spontaneous remissions the pain was sometimes replaced by a "globus" sensation. During the worst parts of the bout there was, in addition, at the xiphisternal level a griping pain resembling in quality abdominal colic. It was sometimes brought on and was always intensified by swallowing. This latter pain was very like that caused by the incompressible bag described in the last lecture, and presumably indicated an area of high tonus which acted as an obstacle to the progress of the œsophageal peristaltic wave. The pain had such a colicky character that he thought at first it was abdominal colic until he considered the position which was clearly at the lower end of the œsophagus. This was confirmed later in the attack by the arrival of true colic pains with the typical mid-abdominal location.

These observations bear out a point I have emphasised on several occasions since our experimental work was carried out. The simplest way of diagnosing a sensation as œsophageal is to ask the patient to swallow. If the sensation is very slight it may be momentarily intensified, due to the tension on the nerve-endings in the wake of the peristaltic wave. If the pain is continuous and of moderate severity, the effect of swallowing will be to relieve it, as the peristaltic wave passes by and the part of the wall giving rise to the sensation becomes constricted. If, on the other hand, the pain is severe, the tone may be so high that the peristalsis is held up in its course. Swallowing will then produce a painful sensation of maximal intensity. As far as diagnosis is concerned the point is that swallowing always produces a change in an œsophageal sensation.

So far I have not mentioned the sensation of fullness which has bulked far more largely in the literature

than the sensation of sinking or emptiness. Curiously enough, W. W. P. and a student recently examined both experienced sinking and not fullness when air was blown into the stomach. Undoubtedly fullness does exist as a separate sensation, though possibly the two may not have been clearly differentiated in the description of gastric symptoms. If, as we maintain, sinking is due to a slight tension on specific nerve-endings of the stomach, then it would be surprising that fullness should be due to the same thing. Becher [38] suggested that gastric sensations were not due to the stomach, but to stretching of the abdominal wall, and he produced some evidence in favour of this. I suggest that Becher's explanation may account for the sensation of fullness, but that sinking is a purely gastric sensation.

Vomiting that so often terminates the sensations of a dyspeptic attack is due primarily to reflex contractions of the abdominal wall, though an observation of Ryle's shows that the stomach also plays a part.[39] Barclay [37] found that if the lesser curvature of the stomach was stimulated by electricity the abdominal muscles contracted, while the stomach remained stationary. Vomiting is not necessarily a painful process, as I can testify myself, when a bag was irresistibly pushed out of the œsophagus by an abdominal contraction without any sensation at all. On the other hand, I received one night a vivid impression how extremely painful vomiting may be. It was during an attack of acute dyspepsia from bad food, and the pain, which coincided with the abdominal contractions, was situated in the region of the xiphisternum, and was probably caused by the contents of the stomach being forced out through a closed cardia.

Sea-sickness.

I am now in a position to put forward for your consideration what I hope may be regarded as a reasonable theory of sea-sickness, which rests partly on the work already described and partly on investigations by Dr. G. H. Oriel [40] recorded in THE LANCET, when he was surgeon to the Canadian Pacific steamships. His investigations have been on the biochemical changes that occur in this condition. Put shortly, they are that on comparing a normal day for the subject under investigation with a day at sea at the commencement of a storm there is on the latter day oliguria, an increase in the percentage of ammonia in the urine for each hour; ketone bodies appear in the urine, while the acidity—i.e., the hydrogen-ion concentration of the urine—is diminished, and the blood-sugar falls. All these results are observed *before* the onset of vomiting. From our present point of view the significant observation is that nausea is about the earliest manifestation of all, and on the day in question (Table I.) nausea was felt from 8 A.M. to 9 A.M. immediately on waking, while ketosis first occurred in the urine from 9–10 A.M. It is true that the percentage of ammonia in the urine passed at 8 A.M. was increased, but with the subject asleep it is impossible to say anything about the nausea at this time. On another occasion (Table VII.) he informs me that nausea was experienced from 1 to 4 P.M., while these biochemical changes were first noticed at 4 P.M.

We have seen that nausea may be produced by a sudden tension on specific end-organs in the œsophagus brought about by the retardation during the latter part of the descent of the ship, and the sensation of sinking in the stomach is presumably brought about similarly. I cannot say whether the acceleration which occurs at the beginning of the ascent is also a factor; Oriel informs me that the ship often hits a wave and there is a sudden jerk. On the theory here presented the nausea and sinking are the primary cause of sea-sickness, and these sensations act by reflexly inhibiting the normal movements of the alimentary canal with stasis of its contents. This is proved by Oriel's experience. For instance, a subject who took an ordinary lunch at 1 P.M. went to sleep between 2 and 4 P.M.; he then woke up with a headache, nausea, and ketosis, and with no desire to take tea; he finally vomited up his lunch at 7 P.M., a 6-hour delay. Again, Oriel has found that his breakfast has reappeared at night, a 10–12 hours' delay. I think it is possible to explain the biochemical changes as the direct result of this stasis, since this would entail failure of absorption in the small intestine, and consequently carbohydrate starvation, hypoglycæmia, and ketosis. The hypoglycæmia and ketosis would probably increase the response of the œsophagus and stomach to the movement of the ship. Though proof of this is lacking, it is at least suggestive that sea-sickness occurs more readily on an empty stomach, and the sensations of nausea and sinking are closely related to, and often associated with, hunger. A vicious circle is thus established—viz., nausea, stasis, carbohydrate starvation, &c. If vomiting is once established the processes of nutrition become still more disturbed, and the patient may end in a state resembling that of diabetic coma. It is now easy to see why sugar in 3-drachm doses should be the most successful preventive treatment, as was found by Oriel to be the case. Much of it might remain behind in the stomach; but some of it would certainly get through into the intestine, raise the blood-sugar after absorption, and so break one link in the vicious chain.

On this theory it is possible to explain most of the well-known facts about sea-sickness.

Owing to the prevailing winds ships "pitch" from England to America and "roll" on the return journey. More people are sick going out, since the up-and-down movement of pitching is worse than the side-to-side movement of rolling. One of the best means of averting sea-sickness is to lie down flat. It is clear that this will not entirely do away with the effect of a bad pitch. Wearing a tight abdominal binder, or bracing the muscles of the abdominal walls to prevent sinking, are well-known prophylactics, and slow, deep respiration will act in the same way.

Other theories of sea-sickness have been dealt with by Oriel and need not detain us long. He found no evidence of any excessive stimulation of the labyrinth either by examining for nystagmus or by carrying out functional tests on the revolving stool in port and on board ship during the voyage. He himself met with three deaf mutes travelling together for the sake of company—one of them editor of the *Deaf Mutes' Gazette* of America. One of these three was sick, though it must be admitted they were in the tropics at that time when sickness on board ship was due to other causes. All these points are against the labyrinthine theory, although it may play a part in certain cases. Similarly, he has dismissed the neurotic or auto-suggestion theory. Undoubtedly people are sick as soon as they reach the ship or when travelling on perfectly calm water along the River St. Lawrence. Over-feeding, constipation, migraine, and pregnancy are all well-known predisposing causes; but sea-sickness is too definite an entity to be explained in any such way. Finally, we have the two theories of cerebral anæmia on the one hand, and cerebral congestion on the other. Although many of the facts I have enumerated fit in satisfactorily with either of these theories, there *is* evidence for a primary nausea, but *not* so far as I know for these other possibilities. In the present state of our knowledge it is hardly worth speculating on a possible fibrosis of the alimentary canal that may render old people immune to sea-sickness, or why babies are free; it is presumably owing to the jerking that people, and especially children, are occasionally sick on railway and motor-car journeys. It is quite clear that certain other factors may perhaps be present in these relatively uncommon cases; but this hardly affects our view of sea-sickness which may attack one-third of all the passengers on a voyage.

Cardiac Pain, Angina Pectoris.

It may seem presumptuous in a short half hour even to attempt to say something new on the subject of angina pectoris; but as in these lectures I have

so far dealt, almost exclusively, with sensations in the throat, chest, and upper abdomen, it would seem strange to confine myself entirely to the upper alimentary tract as their cause, and spend no time at all on that intensely interesting subject, the cardio-vascular system, especially as within the next fortnight we shall be celebrating and meditating on Harvey's great discovery. Further, as a physician who has had the privilege, though a doubtful one, of experiencing these pains himself, and whose interest has been naturally aroused in this subject, I feel that I may have a special claim on your attention. Since these lectures are primarily experimental, I shall only mention theories of angina pectoris that have been brought forward up to the present time, so far as they have a bearing on the work described. One such theory has been advocated strongly by Verdon,[41] who claimed that angina pectoris is due to the disturbances of the nervous mechanism of certain spinal segments, arising not in the heart, but usually in the stomach or œsophagus. These organs become distended with gas, and the tension of the muscular coat stimulates nerve-endings which spread to the spinal cord and give rise to the anginal syndrome. Of course it is true that acute dilatation of the stomach may reflexly produce a serious and perhaps fatal cardiac disturbance, and symptoms may be relieved by the passage of a stomach-tube; but there are observations by Payne [22] and myself on two cases of ordinary angina which certainly negative this explanation as a universal cause of the condition.

E. T. K., a farmer, aged 42, had for some years complained of pain in the upper part of the chest on the left side after exertion. It used to pass down the left arm. He was a stout man of exemplary habits. There was no history of alcohol. X ray showed that the heart was greatly enlarged to the left side, and the stomach seemed somewhat displaced to the right. There was no valvular disease.

An œsophageal tracing was taken. The bag was 3 cm. above the dome of the right diaphragm. The diastolic pressure was 1 cm. falling to 0. The patient then took some exercise and slight pain followed. The mean pressure had fallen to −1 cm. and there were still no contractions. It was noticed that swallowing produced very little effect on two occasions; but on another occasion, after swallowing, a rise of 10 cm. pressure was observed.

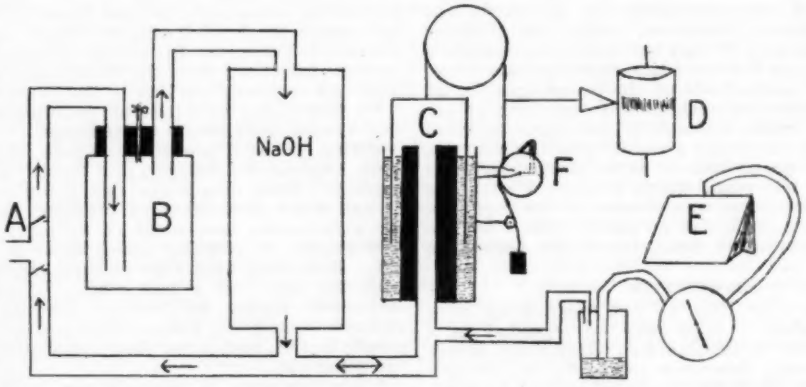
Another patient who had mild anginal attacks after exercise used to be able to get rid of his pain by making a loud roaring noise—i.e., expelling his breath under pressure through a partly closed glottis. It was observed on the X ray screen that this manœuvre was followed by an increase in the volume of the gastric air bubble which is the reverse of what one would be led to expect on Verdon's hypothesis.

It was more or less by chance that Campbell and I [42] came to make observations that we think have a definite bearing on this subject.

The patient was a man who was being treated in the oxygen chamber of Guy's Hospital. His age was 66 and he was admitted for breathlessness and pain in the chest on Feb. 25th, 1924. He had always had good health till April, 1922, when he had to go into hospital for a time. He returned to his work as a carpenter, continuing under medical treatment, but had to give up work finally in July, 1923, for breathlessness and pains in the legs. He felt much better when he was discharged but was not able to go back to work. On readmission he complained of orthopnœa and short acute attacks of breathlessness at night; also of giddiness, insomnia, and loss of weight. He had attacks of pain which were brought on by exertion—the pain being substernal and præcordial and a little down both arms—especially if he walked after meals. He was diagnosed as myocardial disease. His heart was enlarged both to the right and to the left, the maximum transverse diameter being 7¼ inches. There were occasional extra-systoles but no bruits. There was a little œdema of his feet on admission, but none when he went into the oxygen chamber; there was no albuminuria. There were no abnormal physical signs in his chest and there was little sputum, although he had a cough. His breath could be held 15 seconds.

This patient was investigated by means of a closed circuit apparatus based on Douglas and Haldane's [43] apparatus; it is shown diagrammatically with certain modifications in Fig. 13. The patient breathes through inspiratory and expiratory valves A. During expiration the air passes upwards through a vessel B, from which a sample of air may be taken for analysis of the CO_2 percentage, then through a large tin containing soda lime and flake caustic soda in order to absorb the CO_2, and then into the spirometer (C), which rises, and the extent of the rise is indicated by the fall of the needle which is marked on the drum (D). During inspiration the air passes out of the spirometer through the inspiratory valve back into the lungs; at the same time an amount equal in volume to that which is absorbed by the lungs is drawn from the Douglas bag (E) through a meter and water valve into the closed circuit, so that the pressure remains constant. While the amount of the pulmonary ventilation can be measured from the drum record, it can also be determined by a work adder (F) as used by Prof. F. G. Benedict, by means of which the volumes of successive expirations are added together. The CO_2 output is calculated from the pulmonary ventilation and the CO_2 percentage is determined at frequent intervals. Actually the inspiratory and expiratory valves were attached to a face-piece which was fitted airtight to the patient, and held in place by straps attached to a canvas cap. The valves were attached to the apparatus by corrugated rubber tubing, so that the patient's respiratory exchange could be determined while he was sitting at rest, doing muscular work, and again sitting at rest until the values had again reached the resting level.† The muscular exercise consisted of stepping up and down a height of 13 inches by means of two steps, and this was repeated 18 times in three minutes.

FIG. 13.

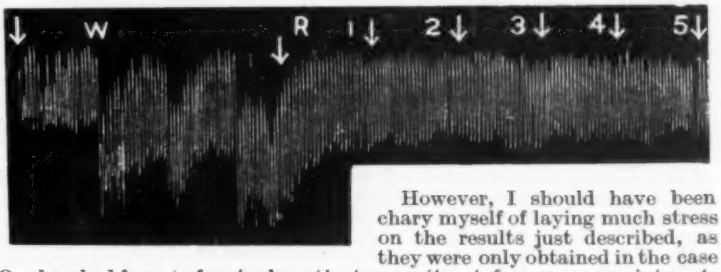


Observations were made on a number of patients and normal students, and, as might be expected, level tracings were obtained on the drum; but in the case of the patient with myocardial disease a drop in the tracing commonly occurred during the exercise. For instance, in Fig. 14 (B), where the arrows mark intervals of a minute, the drop began after the

† It is hoped to describe in the Journal of Physiology a form of the above apparatus more suited for ordinary metabolic work.

first 1½ minutes of work (W), and reached its maximal value after the third minute. The tracing gradually regained its normal level during the first two minutes of rest (R), after the exercise was finished. This meant that during the exercise the spirometer rose, and this could only have been due to an increase in the volume of air in the circuit. It was noticed at the same time that the pressure in the circuit rose slightly, and the intake of oxygen through the meter fell to zero. Since the CO_2 was being absorbed all the time the only place where the extra volume could have come from must have been from the patient himself. The volume in question amounted to about 1400 c.cm., but actually it must have been more than this, because the patient was absorbing oxygen all the time from the apparatus and yet no oxygen, or very little, was coming in through the water valve. If the normal amount of oxygen was absorbed by the lungs calculation shows that the O_2 absorbed from the circuit would be about 1200 c.cm.; but this figure is probably too high, so that actually during the work the patient expelled from his chest a volume intermediate between 1400 and 2600 c.cm. One possible explanation was that the patient's chest had fallen in, so that he had expired air from the lungs into the apparatus. This possibility was tested by recording by means of a stethograph the movements of the patient's chest on the drum below the respiratory tracing. Every time the patient stepped up there was a rise in the stethographic tracing; but the general level of the tracing remained constant, in spite of the fact that air was being expelled from the chest during the later part of the work. In fact, the only event that altered the stethographic tracing was when the patient sat down, as shown at R, which upset the adjustment of the apparatus. Clearly there was no falling in of the chest, and I think we may assume that if there was no falling in of the chest there was also no rise in the diaphragm, though we have no direct evidence on this point. Another possibility that suggested itself was that the air was expelled from the lungs because they were actually engorged with blood and perhaps at the same time there was some cardiac dilatation. If this is the case then we have found a method of measuring the efficiency of the pulmonary circulation which may obviously be of some importance in the future investigations of circulatory problems.

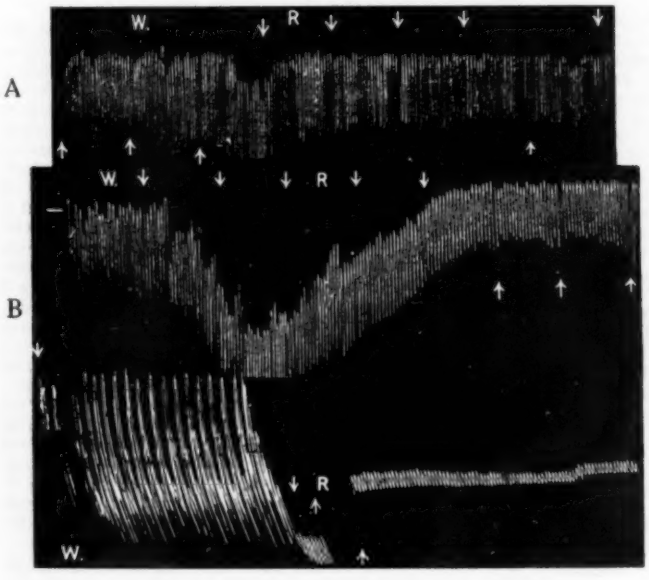
FIG. 15.



However, I should have been chary myself of laying much stress on the results just described, as they were only obtained in the case of a single patient, were it not for some very interesting evidence of Dr. G. P. Crowden's, which has been recently communicated to the Physiological Society. I will describe three of his results. A radiogram of his own chest was taken with the breath held at the end of a normal inspiration. A second radiogram was taken also at the end of a normal inspiration, but with the breath held and an extreme effort made to breathe out against obstruction. This is Valsalva's well-known experiment, and the result was that the pulse could not be detected at the wrist, though on the X ray screen it was observed that the heart was making slight movements. A third radiogram was taken at the end of a normal inspiration with the breath held, and an extreme effort made to breathe in against resistance (Müller's experiment). The effect of Valsalva's experiment was to cause a diminution in the size of the heart shadow, while the root shadows were much less dense than at the end of normal inspiration when no effort was made to expire. This can only have been due to much of the blood having been pumped out of the chest, while it was not able to enter from the venous reservoirs outside owing to the high intrathoracic pressure. In Müller's experiment, however, the shadow of the heart was much increased in size, being practically twice as large as in Valsalva's experiment, while the dark root shadows spreading out into the lungs indicated engorgement of the pulmonary vessels. If such a great alteration in the distribution in the blood is obtained in such simple experiments on a healthy subject our result is perhaps not so surprising after all.

Another point of interest is shown in tracing A of Fig. 14. In this case the patient had performed the same exercise; but it was on the third day of his treatment in the oxygen chamber. It is to be noticed that the drop was small, and probably did not amount to more than half a litre of air. A number of similar observations were carried out on this patient when he was under, and when he was not under, the influence of oxygen, and results agreeing with the foregoing were always obtained. Another observation was made that has a bearing on the present discussion. The patient told us that he felt præcordial pain during the exercise, and in one experiment this began just at the beginning of the second minute and coincided with a big drop in the tracing, which corresponded to about 1500 c.cm. No further systematic observations were made on this phenomenon of pain at the

FIG. 14.



time; but two years later he was again examined by Dr. Campbell, because it was thought that another way of proving that engorgement of the lungs was caused by exercise would be to determine the vital capacity which would be diminished under the circumstances. Before exercise the vital capacity was 3 litres, while immediately after the pain began the value was 2 litres. Immediately after the pain had disappeared the value was 3·1 litres. A similar diminution but not so large was noticed on a second occasion. In this connexion it is to be noted that Williamson [44] found by X rays that the heart was dilated immediately after exercise in four out of ten patients who on clinical grounds showed evidence of circulatory insufficiency, while normally the cardiac shadow diminished immediately after exercise.

The accumulation of blood in the lungs means that the right side of the heart has delivered the blood, but that the left side of the heart has failed to get rid of it. What is this but acute left-sided failure; may it not be accompanied by strain of the right ventricle in its attempt to keep the blood moving on? May not the pain be due to this strain?

In Fig. 14 and in another similar experiment the pulmonary engorgement began after about the first minute of exercise, and relief only began when the patient sat down after the exercise was finished. However, Starling showed that dilatation of the heart with lengthening of the muscle-fibres stimulates it to increased activity, and an experiment is shown in Fig. 15 in which during the exercise left-sided failure and recovery followed one another in quick succession, since there are three separate falls in the tracing representing volumes of 450, 300, and 450 c.cm., each followed by a return to the normal level.

The exact relation of the cardiac pain to the circulatory changes described requires much further observation. While the onset of pain has been observed to coincide with the fall in the tracing, it began on one occasion when the tracing had regained its normal level after recovery was complete. Cardiac pain might be expected to be analogous to other visceral pain, so that it would be caused by an increase in the muscular tension during diastole, which would depend on the same two factors of diastolic pressure and radius of curvature. Though cardiac pain might be most commonly felt during pulmonary engorgement and cardiac dilatation, it might also occur after recovery if the diastolic pressure became very high.

These experiments raise fresh problems for consideration. Is there such a thing as an acute right-sided failure lasting a few seconds associated with an accumulation of blood in the liver and large veins perhaps also accompanied by strain of the left ventricle with its characteristic pain? Certainly in my experience there are at least two distinct kinds of cardiac pain. There is a sharp, what the psychologists might call "bright," definitely localised pain on the right side of the chest very often at the inner end of the third right costal space. Then there is the ill-defined diffused constricting sensation which is felt at the top of the left side of the chest and simultaneously down the arm. Is the left-sided sensation due to left-side strain associated with acute right-sided failure and the right-sided sensation with a right-sided strain due to left-sided failure? I have used the word "acute" advisedly, since it is a well-known fact that typical angina does not occur in chronic gross heart failure, and as the heart failure improves the angina is increased. The patient that I have described illustrates this to a marked degree. He has recently been in hospital again owing to his anginal pain, while some weeks previously he was laid up with pain and swelling in the legs, but no pain in the chest. It may be that in gross cardiac failure with œdema the heart gives up the struggle, and does not work hard enough to produce its characteristic pain.

Let us consider the bearing of these facts on the treatment of angina. I can only say that in most cases of angina amyl nitrite acts like a charm; the pulse is quickened, the face is flushed, and the head swims, and at this point the pain rapidly fades away. It is well known that the blood pressure is not always raised in an attack, nor does it fall before the relief of pain by amyl nitrite. May the latter not act by stimulating the left side of the heart to renewed efforts? But if this is the case, is it really wise to attain the goal by whipping a flagging horse? It was in some such strain as this that I wrote on the pathology of angina in the last edition of the text-book for which I am responsible, and I was much interested to receive a letter from a doctor shortly after the appearance of the book in which he stated that he had attanded a lady for angina pectoris—it may have been coronary embolism—and that a full dose of amyl nitrite had failed to relieve her symptoms, and on administration of a second dose the patient died. If a moral may be drawn it is that a patient who has had angina should live within his cardiac reserve. He has many opportunities from the slight sensations he experiences of judging when he is overdoing things. It is better not to rely on drugs.

Some very interesting observations were brought forward at a recent meeting of the Physiological Society by Bramwell. He administered amyl nitrite to himself and then measured the effect on the electrocardiogram and on the sphygmogram from the carotid taken by a delicate optical method. The results are fascinating in the suggestions they raise, but tantalising because they contain no absolute proof of these suggestions. According to these experiments, amyl nitrite causes a diminution in the time occupied by the cardiac cycle; in other words, the heart is quickened. There is an increase in the rate at which the blood is expelled through the aortic valves. There is also an increase in the rate of the isometric contraction of the heart; but what is especially suggestive is that the maximum effect on the isometric contraction is reached before the maximum effect on the rate of ejection or on the length of the cycle. Is there not a suggestion here that amyl nitrite acts by stimulating the heart? Since writing the above Dr. Anrep has informed me that his experiments have proved that amyl nitrite definitely stimulates the cardiac muscle.

I think it possible to suggest a treatment for at any rate mild angina (angina minor) by considering Crowden's experiments, since it was a forced expiration against resistance that emptied the blood from the chest and diminished the size of the heart. One of the patients that I have already described obtained relief from his angina by making a roaring noise. I have myself successfully got rid of mild left-sided pain by this means. The immediate effect of the forced expiration is often instantaneous, and I think this method is often effective in preventing the return of the pain. I have one recent observation on right-sided pain where this procedure definitely made the pain worse, but the latter disappeared on taking a deep inspiration—i.e., the reverse of the left-sided pain.

So far I have treated the subject of cardiac pain as being due to an adequate stimulus, which is distensile. I should like to quote [45] what must be the earliest proof that other kinds of mechanical stimulation of the heart do not produce any effect on sensation. It was the case of a young nobleman who had had his ribs broken, and on the left side an abscess had formed and left a large gaping wound; he came to London when 18–19 years old. King Charles I. heard of it, and asked Harvey to see him and report on the case. Harvey found an extensive ulcer in the man's side—

> "into which I could readily place three fingers and a thumb. Which done I straightway perceived a certain protuberant fleshy part, affected with an alternating extrusive and intrusive movement; this part I touched gently. Amazed with the novelty of such a state, I examined everything again and again, and when I had satisfied myself, I saw that it was a case of old and extensive ulcer, beyond the reach of art, but brought by a miracle to a kind of cure, the interior being invested with a membrane, and the edges protected with a tough skin. But the fleshy part (which I at first sight took for a mass of granulations, and others had always regarded as a portion of the lung), from its pulsating motions and the rhythm they observed with

the pulse—when the fingers of one of my hands were applied to it, those of the other to the artery at the wrist—as well as from their discordance with the respiratory movements, I saw was no portion of the lung that I was handling, but the apex of the heart covered over with a layer of fungous flesh by way of external defence, as commonly happens in old foul ulcers.

"Instead of a verbal answer, therefore, I carried the young man himself to the King, that His Majesty might with his own eyes behold this wonderful case; that, in a man alive and well, he might, without detriment to the individual, observe the movement of the heart, and, with his proper hand even touch the ventricles as they contracted. And His Most Excellent Majesty, as well as myself, acknowledged that the heart was without the sense of touch; for the youth never knew when we touched his heart, except by the sight or the sensation he had through the external integument."

I have quoted this case to illustrate the value of a clinical observation on the part of one who has been handed down to posterity, primarily, as an experimentalist. There is a movement nowadays that might be called "Back to clinical medicine," and which is apt to treat the experimental side of the subject with scant respect. I would urge that to place these two methods of observation in antithesis is a mistake. Certain it is that the application of the so-called experimental method to the alleviation of disease requires the most careful clinical observation, and it is not less certain now, than it was in Harvey's day, that clinical observation must be incomplete without further experimental study.

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SOME ASPECTS OF DENTAL SEPSIS,

FOCAL AND RESIDUAL.

By TALLENT NUTHALL, M.D. LOND.,

MEDICAL ASSISTANT, GUY'S HOSPITAL.

A careful search must be made for any focus of infection, such as a tooth, and, if one is found, it must be eradicated.

A SENTENCE such as this is almost certain to occur in any article or lecture on those diseases which we now regard as the results of bacterial toxæmia. When the teeth are incriminated the focus is believed to be completely eradicated by the extraction of those teeth. Yet it is evident from the results obtained that extractions are by no means a certain cure, and that many patients are no better and some are worse off than they were before. During the last 10 or 20 years so many teeth, innocent and guilty, have been sacrificed that it is coming to be fairly generally held among the lay population that a visit to the doctor is most likely to result in their being advised to part with some or all of their teeth. They see on all sides the dentures, conspicuous or otherwise, of their friends, and note that while some fortunate ones have been cured, many remain crippled. One meets with great divergence of opinion among the profession, and nowadays to mention dealing with the teeth as a cause of focal sepsis is to excite mildly derisive smiles amongst an audience of medical men. There is a general feeling that the thing may have been overdone, that there are factors which are not yet understood. There does seem some reason for believing that the procedure is becoming discredited not only among the lay population but also among the medical profession.

In this article the results of bacterial toxæmia are taken to include infective arthritis, sciatica, and neuritis generally, lumbago, and the so-called fibrositis. Where only one is mentioned the rest are implied and are only omitted to save space. Furthermore, the subject is dealt with entirely from the medical point of view, and purely dental aspects of the question are not considered.

The Teeth in Themselves not the Source of Trouble.

No one will deny that the teeth are very frequently the primary site of the infection, but it is obvious that if the infection is confined to the teeth and the teeth only, generalised symptoms are unlikely to result. A carious tooth is an infected tooth, and many teeth are the subjects of pulpitis, but neither of these conditions will in itself give rise to arthritis or fibrositis. In fact, it is not the infection of one or more teeth that matters. What does matter is the extension of the infective process into the neighbouring structures, first the periodontal membrane and—more important still—the alveolar bone. Both are highly vascular and there are plenty of blood-vessels to carry into the system the toxins which result from bacterial metabolism. Over and above this, the structure of the alveolar process, loose and with a multiplicity of cancellous spaces, is a particularly favourable medium for the growth and spread of organisms. When this invasion takes place the area of infected tissue is enormously and progressively increased, absorption of toxins occurs on the grand scale, and generalised symptoms appear.

How Infection Occurs.

There are three means of infection: (1) via the pulp and root canal; (2) by direct extension from the periodontal membrane; (3) by direct extension from a fragment of root left behind after extraction.

The first commonly results in the formation of an apical granuloma or abscess; that is to say, the process may be localised for variable periods of time. There may, however, be no localisation but an infection spreading into the alveolus without the

formation of any line of demarcation such as is necessarily implied by abscess formation.

The second is the commonest route. Considering the vast number of teeth which show signs of periodontitis, abscess formation is rare. The process is one of direct extension, first of all in the membrane and thence into the bone.

Every now and then during extraction a fragment of root is broken off and left behind. It is usually already infected, but in any case it becomes so before the socket has healed. After a lapse of time either an abscess forms or else a diffuse infective process starts and spreads in the alveolar bone.

Infection may also occur via the blood stream. It has been suggested that the organisms are carried by the blood stream from some other organ to the teeth, which they apparently select as their site of operation. This seems to be far less frequent than the other routes.

The Rôle of Pyorrhœa.

Many authorities hold that pyorrhœa is of little or no importance in the causation of arthritis and allied conditions, but the question seems to be entirely one of the extent to which the pyorrhœa has advanced. Strictly speaking, pyorrhœa is a symptom of an infection of the gingiva and superficial alveolus. So long as it is confined to superficial regions from which there is free drainage into the mouth, the effects on the system are likely to be those produced via the tonsils or the gastro-intestinal tract. Directly, however, the pyorrhœal pockets involve the periodontal membranes the way is open for direct extension of the infective process in the membrane and thence into the alveolar process.

Dental Skiagrams and their Import.

Apical abscesses, dental cysts, and granulomata are all striking features when seen in dental radiograms. Dead teeth can usually be recognised by changes in the pulp cavity and root canals, which become less defined and may be lost altogether. Periodontitis, when marked, is unmistakable. The healthy periodontal membrane appears in the negative as a fine, clearly defined black line between the tooth and the lamina dura. In periodontitis it is widened, sometimes along the entire surface of the tooth, but more often in parts, so that its outline becomes irregular and uneven. Proliferation of the lamina dura also occurs, so that the periodontal outline may vanish more or less completely, and the shadow of the tooth as a whole loses definition. More important, though less easy to recognise, are the changes which result from infection in the alveolar bone. In a radiogram the cancellous structure of the alveolar process can be clearly seen. The fine trabeculæ appear in the negative skiagram as light or white lines, crossing one another at angles and enclosing minute angular spaces which appear darker. When the bone is infected, these appearances change. The details become blurred; in places the trabeculæ are thickened and the small angular spaces are replaced here and there by rather larger, rounded spaces which appear almost black. These are minute areas of rarefaction, which are always to be seen in the neighbourhood of the apices of teeth which show periodontitis. They are, in fact, the earliest evidence of the invasion of the alveolar bone by an infective process. Larger oval or irregular-shaped areas of this rarefaction are often to be seen in the interdental septa or just deep to the alveolar margin where absorption is taking place; these denote infection of longer duration. Another common rarefactive change is an irregularly circular or oval area spreading from or around the apex of an infected tooth, an area which is more radioparent than healthy bone and appears greyish in colour or less dense than the surrounding tissue. In it the cancellous structure is less sharply defined and may be unrecognisable. This appearance is caused by a diffuse infection of the alveolar bone, spreading away from an infected apex or root without the formation of a classical abscess or any limiting process. Several such areas may be seen, most often in connexion with the premolar teeth. In time they coalesce, and eventually a large part of the alveolar process may be so affected. When the whole or a complete half alveolus is infected the condition is not so easily recognised in the films, but the loss of detailed structure and lack of contrast and density should reveal it. If such an area be explored it will be found spongy and soft, instead of hard and firm like healthy alveolar bone.

Changes in the nature of sclerosis may also be frequently seen. As mentioned above, the lamina dura in the neighbourhood of infected periodontal membrane commonly undergoes proliferation. There may be areas of sclerosis in the interdental septa or adjacent to the apices of the teeth. These areas may replace the whole of the normal alveolar process between two teeth. They appear as almost structureless whitish patches of irregular shape and variable size. By some they are regarded as attempts at repair or defence, but it seems equally reasonable to consider them as early reactive changes evoked by the invading micro-organisms.

The Contribution of Bacteriology.

Although there can be no doubt that a suitable vaccine is one of the most valuable means of treatment, it might be well to ask whether bacteriological investigations can help us in diagnosis. A streptococcus is almost universally held responsible for the lesions we are considering, but it is not possible to incriminate any particular type of streptococcus. It is reasonable to suppose that any streptococcus, given certain opportunities and a suitable environment, is capable of causing disease. The *Streptococcus hæmolyticus* and the *Streptococcus viridans* especially are the two which seem most active in producing arthritis or any infective condition. It is not possible to argue, however, that the finding of a streptococcus in a culture from a pocket or from the apex of an extracted tooth is to be regarded as evidence either that an infective process is at work or that the organism so isolated is causal. Swabs from any structure in the mouth will almost always yield a growth of streptococci of some sort, mixed with other organisms. There are, however, two ways in which bacteriological investigations can help towards forming an opinion. One is when the cultures made from a pocket give a pure growth of a streptococcus, and especially *S. viridans*, to the exclusion of other organisms. The second is when the patient's serum can be shown to contain agglutinins or other antibodies specific for the organism which has been isolated. Unfortunately, this can only be demonstrated in a small proportion of cases, but when it does occur it may reasonably be argued that infection is taking place and that the organism agglutinated is the offender. The converse argument—that the absence of demonstrable antibody formation denotes a deficient resistance on the part of the patient—cannot be regarded as equally convincing.

The Soil.

The difference in the way in which patients react is a striking feature of these infective conditions. In the imperfect state of our knowledge we explain this as being a question of resistance on the part of the patient. The great prevalence of arthritis, fibrositis, and the other results of focal sepsis seem to point to the conclusion that there is less resistance now among the general population than there was a generation ago. The title given by Pern to his article the Streptococcus—the Biggest Menace to Mankind,[1] has a very real application in these days when one considers the very large amount of incapacity and illness caused by this organism. Some patients show a surprisingly high resistance to a degree of infection which would speedily disable others. To give an example:—

A man, aged 62, with rosy cheeks and a healthy appearance, who had always led an active out-of-door life, complained of pain and stiffness in one shoulder and in his neck. This had been increasing since a fall a short while before. He was proud of the fact that he had an almost complete set of his own teeth. Radiograms showed that he

[1] Med. Jour. Australia, 1922, ii., 518.

had seven chronic apical abscesses which must have been developing for years. Yet his general condition was extremely good and he showed none of the symptoms—such as loss of colour, earthy complexion, depression, lassitude, and incapacity for physical exertion—which are usual in focal infections. His resistance was so great that it was not until bruising from his fall slightly damaged the shoulder-joint that the extensive infection in his mouth was able to give rise to any secondary effects.

As an instance at the other extreme, a woman of 42 came with a six months' history of acute sciatica which nothing relieved. She had had several attacks of "P.U.O." labelled malaria as she had lived in East Africa. She looked sallow and ill. On radiographing her teeth, I found one large abscess at the apex of an upper molar tooth.

Resistance to the results of focal infection, therefore, is a very variable factor in different people, and one person may carry a focus of infection in his mouth to the end of his life without showing any apparent results from it, while a far lesser degree will speedily disable another. As the resistance varies, so does the recuperative power.

Methods of "Eradication" and Where They Fail.

When it has been decided that infection of the teeth is the cause of a patient's lack of health, the various procedures commonly adopted are :—

1. Complete clearance of all the teeth. This may be carried out forthwith without any previous radiographic or other scientific examination, on a "hit or miss" principle which has little to commend it.

2. Extraction of the obvious offenders, teeth with granulomata or apical abscesses.

3. Extraction of all teeth which show any skiagraphic sign of infection after careful consideration and previous examination.

4. Extraction of "dead" teeth only. The number of workers who confine their attentions to dead teeth and strongly oppose the extraction of any tooth which is still vital, whatever may be the radiographic appearances, is a large one, surprisingly large when one considers the inference to be drawn from such limited procedure. This inference is that only dead teeth can be so infected as to give rise to disease. One constantly meets with the expression of this view, not only in this country but also in reports on radiograms made in the United States, and when not expressed it is implied by the fact that only dead teeth have been dealt with. I feel that this opinion is in such strong opposition to the facts that I was greatly tempted to head this paragraph "The Dead Tooth Heresy." Nothing, in the present state of our knowledge, affords any grounds for the supposition that a tooth must be non-vital before it can be concerned in focal sepsis.

Any of these procedures may prove successful. Any of them may fail, and the reason for failure is the same in all the groups. It is because the original treatment is not radical enough and residual infection is left behind. Where a solitary apical abscess, for example, is dealt with by simple extraction, it is reasonable to expect that the resulting drainage, followed by granulation and healing of the bone, will put an end to the trouble, but when there is diffuse infection involving the apices of two or three teeth or one-half of the alveolar process, then it is not conceivable that the mere extraction of the teeth will in all cases put a stop to the infective process. Most of the softened infected bone is left behind, and in it enormous numbers of organisms continue to multiply and pour their poisons into the blood stream almost as freely as before the teeth were extracted. The gum heals with remarkable rapidity. Even an abscess cavity, left when the tooth has been extracted, is quickly covered over by dense gum tissue before it can be filled with healthy bone. Owing to this rapid healing, the length of time during which drainage can take place is very limited and, where a large area is involved, the amount of drainage must be almost negligible.

The Logical Treatment.

If we are agreed that a certain group of symptoms is due to an infective process, the logical treatment is obviously the removal of the source of that infection. If, in the condition under discussion, we cannot bring about this end by simple extractions, we must take such further steps as will ensure it as far as possible. This means that, in addition to extraction of teeth, any unhealthy bone must be removed also, or, in other words, a partial or complete alveolectomy must be performed. This sounds a formidable undertaking both for the patient and for the operator, but it is not in fact so severe as it sounds. Having submitted many patients to it and from personal experience as well, I can say that the general effects in the way of shock, &c., are slight, the amount of pain little if any more than after ordinary extractions, while healing and consolidation are rapid and dentures can be made to fit quite as perfectly as after simple extractions.

Briefly stated, the operation consists in removing the teeth, elevating a flap of gum tissue, excising the interdental septa, and removing all soft, spongy bone from round the tooth sockets. When hard and healthy bone is reached, the rough edges are smooth with a burr and the flaps of gum stitched together. Where only a small area of the alveolus is involved it may be possible to remove the unhealthy bone by way of the open socket or by removing quite a small portion of the buccal surface of the alveolus. In any case, the extent of the procedure is determined by the point at which healthy bone is encountered, but the important part of the proceeding is to leave behind no unhealthy bone.

Residual Infection.

We all have patients who have had their teeth extracted without experiencing any improvement of the condition for which the extractions were done. This disappointing result is most common in infective arthritis. It may be that in a certain number the condition of their teeth was not responsible for their trouble, but I believe that many such results are due to residual infection, and this belief is confirmed by radiograms taken of the edentulous jaws. Any or all of the bone changes resulting from infection may be found persisting in the alveolar processes after the extraction of teeth: tooth sockets which have never consolidated and are little more than chronic bone abscesses, areas of sclerosis, and—most frequent of all—areas of rarefaction, large and small, diffuse and limited. If we accept these radiographic appearances as evidence of infection, then we cannot be surprised that the patients do not improve. To cite a typical case :—

A man aged 44, who had had no illnesses, suddenly developed arthritis in one shoulder and one toe-joint. All his teeth were extracted, but the condition progressed and gradually affected other joints. A year later the tonsils were removed, but this caused no cessation in the progress of the disease. When seen two years after the beginning of the arthritis, practically all his joints were involved and he was a cripple. Radiograms of his edentulous jaws showed that the whole of his upper alveolar process was still infected, hardly any normal alveolar structure being visible, while the lower alveolus showed numerous areas where infection still persisted.

There is another type of residual infection which was first described by Eyre. Normally, the occlusal surface of the alveolar process appears in the radiograms as a sharply defined, smooth edge when consolidation is complete after the extraction of the teeth. One frequently sees small areas where the smooth edge is replaced by a number of minute, irregular, bony projections resembling the teeth of a fret-saw. These areas are due to persistent infection deep to the gum, and Eyre has demonstrated the invariable presence of the *Streptococcus viridans* in cultures made from these bony spicules. Such a state of affairs is clearly capable of maintaining a supply of bacterial toxins in the general circulation.

Alveolectomy versus *Extractions.*

This does not mean that we should advise alveolectomy, partial or complete, for every patient who is suffering from the effects of focal sepsis arising in connexion with the teeth. We know that in a large number of cases simple extraction of the infected teeth is sufficient to bring about a cessation of the trouble. Patients vary in their resistance and in their

recuperative power. In one patient the extraction of teeth and the short period of drainage which follows is sufficient to swing down the balance towards a recovery which may be permanent. In others a temporary improvement is followed by the gradual reappearance of their troubles. It is difficult to tell beforehand how any one particular patient will respond to extractions, and there are a certain number in whom it is difficult to decide whether alveolectomy is called for or whether simple extractions will prove sufficient. We may divide all patients into three classes. In the first come patients with one or perhaps two apical abscesses or a granuloma, in whom the process is limited, and whose general condition is good. For these it may reasonably be expected that simple extractions are all that is required. Class 3 consists of those who have an obvious diffuse infection of one or both alveolar processes and who show signs of a severe degree of toxæmia in addition to joint or fibrositic trouble. These call for alveolectomy. In this third class also come the patients whose alveolar processes show residual infection after their teeth have been extracted. Class 2 is the one which affords considerable difficulty. There may or may not be a granuloma, but two or three teeth show a considerable degree of periodontitis with early changes in the bone. Possibly the premolars show periodontitis, while the molars show loss of definition of their apices and of the surrounding alveolar bone. I believe that all such cases should have the position laid clearly before them and be advised to have alveolectomy performed, especially when there is any degree of toxæmia. These are the patients who are likely to improve with simple extractions, but after a time they will relapse and slowly become worse than before, because infected bone has been left behind.

Clinical Condition of Patient the Deciding Factor.

The interpretation of dental radiograms is a matter of considerable difficulty, and the difficulty lies, not in deciding which teeth are diseased, but in determining which are healthy. In practically every set of dental radiograms there are appearances which can be interpreted as evidence of disease. For instance, there are few people who do not show some degree of periodontitis, especially round their premolar teeth. Hence it is not possible to decide from the radiographic appearances alone what procedure must be undertaken to bring about the cure of any case. Just as it is the general clinical examination which in the first instance brings the teeth under suspicion, so the final decision can only be made on the results of this examination. The signs and symptoms must be evaluated and an attempt made to determine the degree of resistance and recuperative power, especially taking into consideration the amount of lassitude, tiredness, and mental depression. The blood must be examined to find out the degree of anæmia and the proportion of polymorphonuclear leucocytes to lymphocytes. Bacteriological and serological examinations should be made. These results are collated, and in the light of this knowledge the radiograms are examined in order that the final decision can be made as to the extent of the mischief and the procedure required to eradicate it. This decision must ensure, first, that no innocent teeth are sacrificed; and, secondly, that no infected tissue is left behind to continue the disease. Whatever course is decided upon, vaccine therapy will be required after the mouth has been dealt with. Finally, an immunising course of vaccine administration must always precede any operative measures, for there are a number of cases on record in which fatal septicæmia or septic pneumonia has followed the extraction of a number of infected teeth. It is, moreover, a matter of regrettably common experience to meet with patients in whom an infective process, involving only one or two joints, has flared up and affected many or all of the remaining joints because they had not previously been protected by an immunising course. In arthritis and the allied conditions we are dealing with some of the most prevalent and crippling diseases which afflict mankind, and our measures, both diagnostic and curative, must be commensurate.

ABDOMINAL PAIN IN PREGNANCY.

By C. S. LANE-ROBERTS, M.S. Lond., F.R.C.S. Eng.,

OBSTETRIC SURGEON TO OUT PATIENTS, ROYAL NORTHERN AND QUEEN CHARLOTTE'S HOSPITALS.

Many cases of abdominal pain in pregnancy, pain that is often severe and that occurs continuously or in crises, show no physical signs of any kind. Some people are undoubtedly sensitive to the stretching of the uterus and abdominal wall and to uterine contractions, but to the majority these gradual processes, with the incessant fœtal movements, do not cause more than discomfort. Many women call for support of the pregnant abdomen, others cannot put up with any pressure on the skin. Parous women, however, generally need some form of corset or belt. Constipation and flatulence are almost universal during pregnancy and frequently give rise to pain. The stretching of the round ligaments often causes pain between the twelfth and thirtieth weeks either in the groins or in one or both sides of the uterus. During the early weeks the pain may cause suspicion of an extra-uterine gestation, appendicitis, or other serious lesion, but there may be no physical signs to support the diagnosis. Later on the pain is often in one or other hypochondrium or above Poupart's ligament, and may be severe enough to keep the patient in bed. There are, however, no physical signs, no tenderness, no rigidity, and no constitutional signs or symptoms.

The commoner organic causes of abdominal pain in pregnancy are as a rule easily recognised, though sometimes the differential diagnosis may be difficult. They may be considered in three groups: where the pain (1) appears limited to the uterus, (2) originates in the adnexa, and (3) is due to associated conditions.

Some Conditions Confined to the Uterus.

(*a*) *Undue stretching of the uterus*, in cases of dual pregnancy sometimes, in acute hydramnios always, gives rise to pain, breathlessness, and palpitation. The sudden increase of amniotic fluid in acute hydramnios is simple to diagnose, as it is rare, develops suddenly, and may be associated with albuminuria and other toxæmic signs. The symptoms are due less to the quantity of fluid than to the suddenness of its collection. The patient, as she lies propped up in bed, often looks like a cardiac case, with cyanosed lips and face. There may be flatulent dyspepsia, vomiting, constipation, a rapid pulse, and œdema of the legs, vulva, and lower abdomen, which is as tense as a drum and very tender. A fine thrill may be obtained, no fœtal parts can be detected, but ballottement may usually be elicited by vaginal examination. Chronic or gradual hydramnios may be more difficult to diagnose from an ovarian cyst complicating pregnancy or an associated ascites. Some patients with ovarian tumours may give a history of amenorrhœa, while the breasts may be enlarged and secrete fluid, and the colour of the vagina may be bluer than usual from pressure. In such cases chief reliance should be placed on the general contour of the swelling, the fluid thrill, and the absence of fœtal parts. The ovarian cyst complicating pregnancy may give considerable trouble in diagnosis, but ascites should not, although it may coexist with hydramnios.

(*b*) *Fibromyomata* are more common in pregnant women than is usually thought, a fact which proves that they often cause no symptoms. Those that give trouble usually fall into one of three groups: (1) the subperitoneal pedunculated fibroids that may give rise to various mechanical changes, so causing pain; (2) the uterus distorted with fibroids, of which one is large and causes pressure symptoms; and (3) one fibroid only, which is either very big or else of moderate size undergoing degeneration. Pain with fibroids is generally due to pressure from incarceration

or to secondary changes. The symptoms and signs of the former condition are usually pelvic pain, sciatica, pains down the legs; interference with bladder function, either frequency or—less commonly—retention of urine; and pressure on the veins, causing varicose veins, hæmorrhoids, and œdema of the legs. The so-called "red" degeneration is the commonest type; small cysts form in the tumour and venous thrombosis occurs. Clinically the onset is sudden, characterised by intense pain and tenderness over the tumour. If the fibroid is large there are marked constitutional signs—high temperature, rapid pulse, prostration, and severe constipation. The diagnosis is established by sudden tenderness in a fibroid which had been previously known as a painless tumour. There is no added liability to abortion. Rest in bed usually brings about an alleviation of symptoms which seldom last for more than a few days. Operation is rarely called for and should be avoided if possible, as these fibroids are usually deep-seated and a myomectomy much increases the chances of abortion.

(*c*) Pain may be very prominent in *concealed accidental hæmorrhage*, which usually occurs in multigravida between the thirty-fourth and thirty-eighth week, and may become one of the most serious catastrophes of pregnancy. The mildest cases should be fully investigated at the onset of the first hæmorrhage. In a typically severe case the patient may feel off colour for a day or so; then, perhaps during some exertion, she suddenly feels severe abdominal pain. This may be described as "something giving way," a "bursting" sensation, or as if some "tight band" of constriction were being tied round the abdomen. It may be indescribably bad, with no alleviation at all, so that the patient rolls about in agony and may faint or vomit.

All degrees of concealed hæmorrhage occur; some accompany or follow a revealed hæmorrhage, and in others the external hæmorrhage appears later. All cases need immediate treatment and very careful nursing and watching.

(*d*) *A hydatidiform mole*, when it causes sudden stretching of the uterus, may cause great pain, which is apt to be most severe when hæmorrhage has occurred in some of the attachments of the mole to the uterine wall. These cases as a rule closely simulate a concealed hæmorrhage, for in both the uterus is of a hard, board-like consistency and markedly tender, and no fœtal parts can be felt or fœtal heart heard. Hydatidiform moles usually occur in the earlier months of pregnancy, when the differential diagnosis is not so difficult.

(*e*) *Rupture of the uterus* in pregnancy is rare, but about 4 per cent. of Cæsarean section scars rupture, so that old Cæsarean cases need watching when there is any unusual abdominal pain before or at term. The rupture may be partial or complete, and is usually ushered in by abdominal pain or vomiting. The pain may be very severe if there is intraperitoneal bleeding or spilling of liquor amnii. Shock is usually due to the onset of labour. The temperature becomes subnormal, the pulse rapid, running, and feeble, accompanied by cold sweating, vomiting, and pallor. On examination the abdomen is found to contain free fluid, and the fœtus may be free in the peritoneal cavity. Surgical attention should not be delayed. If the placenta is attached to the scar there may be very little pain, but a fatal hæmorrhage may occur in a very short time.

Spontaneous rupture of the uterus may occur in a pregnancy in one horn of a bicornate uterus, the accident being analogous to the rupture of the tube in a tubal gestation. Rare cases have been reported of the spontaneous rupture of the uterus during the later months for no apparent reason; they are said to be due to some weakness of the uterine musculature. These cases are associated with marked abdominal pain and shock due to the escape of liquor amnii and blood into the peritoneal cavity. Although rupture of the uterus in pregnancy is a very serious accident it is not attended by the same degree of shock and danger as is rupture of the uterus during labour. If, however, the rupture is of a cornual or an interstitial pregnancy the hæmorrhage may prove fatal in a few minutes.

Traumatic rupture of the uterus is always the result of direct violence, and there is much shock due to pain and hæmorrhage.

Pain Originating in the Adnexa.

The commonest cause of this is probably rupture of an extra-uterine pregnancy. The pain is usually very sudden; the patient may be able to say exactly what she was doing when it started, and it is so severe as to double her up. Often it is accompanied by faintness and sickness, due either to the severity of the pain or the degree of intraperitoneal bleeding or to both. The patient then rests, and either the pain is alleviated or the subsequent getting-up causes a return. The pain of rupture with an extensive intraperitoneal hæmorrhage may be very severe, with marked abdominal tenderness; these are usually the cases with a general effusion of blood. The pain of a tubal mole or slowly leaking erosion may be trifling, and no worse than a mild colic.

Salpingitis or salpingo-oöphoritis rarely lights up in pregnancy.

If ovarian tumours cause pain they usually do so either from pressure or from some axial rotation or degeneration. Rupture of the cyst may occur after incarceration, infection from the bowel with acute abdominal symptoms, or hæmorrhage. In most cases surgical treatment is called for, and is certainly indicated when there is abdominal pain and tenderness. The pain may be due to free blood in the peritoneal cavity, which may come from (*a*) rupture of a tubal or ovarian pregnancy; (*b*) an interstitial pregnancy or rupture of a cornual pregnancy in a bicornate uterus; (*c*) rupture of a uterine scar, from Cæsarean section or myomectomy; (*d*) rupture of a uterine vein. All these are severe cases, owing to the amount of blood lost, and in some the hæmorrhage may very quickly prove fatal. Ruptured tubal pregnancy is by far the commonest.

Rare though they are, the secondary abdominal and broad-ligament pregnancies must not be forgotten, as they may prove formidable problems at operation. Living full-term children have been removed from an amniotic sac that has grown either free in the abdomen or between the layers of the broad ligament.

Epigastric pain is an important prodromal symptom in pre-eclamptic toxæmia. Various explanations have been suggested to account for this pain, which may be very severe. The suggestion that in the worst cases it may be due to stretching of the peritoneum and capsule of the liver by the subcapsular hæmorrhage may be correct occasionally. Epigastric pain may come on shortly before an eclamptic fit, and may be the only prodromal symptom. Other upper abdominal pains occur in heart cases where compensation is failing and in tabetics, although severe abdominal crises are seldom seen outside infirmary practice.

Associated Conditions.

(1) *Pyelitis of pregnancy* is very frequent. Clinically the cases can usually be grouped under one of the following types.

(*a*) The renal type—where the signs and symptoms point to one or other kidney. There is severe pain in the back and loin, or on one side, more often the right. The patient feels and looks ill and has a furred tongue and often a shivering attack and rise of temperature. Headache is usually severe, but urinary symptoms are seldom complained of. The muscles over the painful area are rigid and the kidney is definitely tender. This is the type of case that will improve in a few days with rest in bed and the usual careful treatment, but is very liable to relapse with a recrudescence of all the symptoms. Sometimes the case is more severe with excruciating pain in the right iliac fossa and loin and marked tenderness and rigidity, ushered in by rigors and often accompanied by a temperature of 103° or 104° F. and a very rapid pulse-rate. Once treatment has been established the condition improves, but

much more slowly, so that the patient may be thoroughly debilitated for the rest of her pregnancy. She may have sudden exacerbations of symptoms without any apparent cause, and relapsing attacks in the puerperium.

(*b*) The abdominal type, where the abdominal pain is so severe that there may be difficulty in deciding whether the case is not one of appendicitis, cholecystitis, or intestinal obstruction. There is abdominal distension, rigidity, nausea, and perhaps vomiting with constipation. The temperature may rise to 103° or 104° and the pain may be excruciating. The patient may take a long time to improve and be very enfeebled for the rest of her pregnancy.

(*c*) The generalised type, where there is not much abdominal pain and the signs and symptoms are not localised to the abdomen. This group will not be considered here; the prognosis is bad for both mother and fœtus.

(2) *Acute Appendicitis.*—Pregnancy does not predispose to appendicitis, but the growing uterus may pull on and disturb adhesions formed after a previous attack, and may thus excite a renewal of the disease. It may be very difficult to diagnose, and in all suspect cases a careful examination of the urine and the blood should be made. The enlarged uterus, it should be noted, tends to raise the cæcum and appendix in the later months higher in the abdomen than normal. Almost 80 per cent. of the cases occur in the earlier months; they are rare in labour, and only occasionally come on in the puerperium. The mortality-rate is high, especially when there is suppuration; in one series of 500 cases over 30 per cent. proved fatal, and the incidence of fœtal death and abortion was 40 per cent. Pregnancy aggravates chronic appendicular infection, especially when the appendix is abnormal in length, mobility, shape, or position. Gangrene and perforation occur more rapidly during pregnancy. According to Lee there is more violent and widespread peritonitis, a weaker reaction, less likelihood of protective adhesions, increased vascularity, greater danger of thrombosis and embolism, less adequate drainage, more frequent abscess formation, and earlier intestinal obstruction. The mortality, which is higher after the seventh month, may be called the "mortality of delay." Where there is uncertainty a blood count should be done promptly; a leucocytosis of over 12,000 may be said to indicate surgical interference. Up to the fourth month the signs are as easily recognisable as in the non-pregnant. A rise of temperature, with vomiting, constipation, and localised and well-marked rigidity in the appendicular region, will usually point to the source of the trouble. The sudden onset, rapid pulse, and rise of temperature should distinguish the vomiting from that of pregnancy. The later cases, after perforation has occurred, always need operative treatment. Some cases of suppurative peritonitis may be difficult to distinguish from a concealed accidental hæmorrhage, but—although there is generalised abdominal pain and rigidity—there is in peritonitis a maximum of tenderness in the areas not occupied by the uterus, the flanks, and epigastrium.

(3) *Intestinal obstruction* may be difficult to diagnose in pregnancy. The "pernicious" vomiting of pregnancy begins early and steadily gets worse; its onset is rarely acute, it is not associated with pain, distension of the intestines, or interference with the passage of flatus, and it may be relieved by rectal feeding. Analysis of the urine should help the decision. Treatment is always surgical, if possible without disturbing the pregnancy. The intestinal obstruction may be due to the pregnancy, as in adhesions, a fibroid or ovarian neoplasm, or even the pressure of the pregnant uterus. Or it may be due to a separate and associated condition, such as a strangulated hernia, a volvulus, or a pelvic abscess.

(4) *Retroverted uterus*, with retention of urine, is important between the twelfth and sixteenth weeks of pregnancy. So many women in a normal pregnancy have backache and frequency of micturition at this stage that the condition of overflow incontinence resulting from incarceration of the retroverted pregnant uterus may be missed. There is great abdominal pain and acute distress. With the onset of cystitis the temperature and pulse rise and the patient is acutely ill. In spite of the characteristic physical signs a retroverted gravid uterus may easily be mistaken for other conditions of serious import—e.g., an intrapelvic ovarian cyst, some other tumour, a hæmatocele from a ruptured tubal pregnancy, or a retro-uterine fibroid with pregnancy.

(5) *Gall-bladder pain* occurs sometimes, more often in the later weeks of pregnancy, and calls for dietetic measures and medical treatment. Acute cholecystitis is rare, but the pain, which starts in the right epigastrium and hypochondrium, generally radiates to the right shoulder. Unless operated on at an early stage the gall-bladder is likely to rupture and cause a severe form of suppurative peritonitis.

(6) *Acute pneumonia* may show itself by acute abdominal pain and rigidity in the early stages, and may easily be missed.

(7) *Calculi*, renal, ureteric, and vesical, do occur in pregnancy, and may cause acute abdominal pain and need surgical treatment.

(8) *Suppurative pelvic peritonitis* may arise from many cases—e.g., appendicitis, acute cholecystitis, perforation of the pouch of Douglas by an instrument, and rupture of a pelvic abscess or a pyosalpinx.

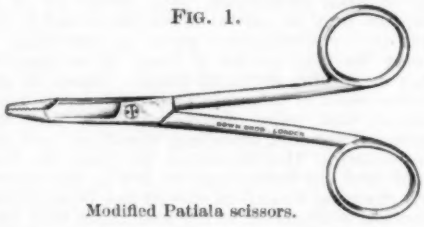
Clinical and Laboratory Notes.

A NOTE ON
SOME INSTRUMENTS USEFUL IN THE NON-TOUCH TECHNIQUE OF SURGERY.

By R. L. SPITTEL, F.R.C.S. ENG.,
SURGEON, GENERAL HOSPITAL, COLOMBO.

THE tendency of modern surgery is to discourage anything suggestive of unnecessary handling of tissues. The ideal set by bone and joint surgery, where even the gloved hand never once comes in contact with the wound, may be impracticable in certain other regions, such as the abdomen. This, however, is no reason why, once the necessary manipulations have been completed, the rest of the operation should not be conducted on the same high plane as the orthopædic operation. The omentum and peritoneum undoubtedly atone for many surgical delinquencies, and it is a significant truism that a good abdominal surgeon is sometimes a poor orthopædist. Whenever possible, neither the gloved hand nor anything that comes in contact with it (such as swabs, ligatures, needles, or the working ends of instruments) should be permitted to touch the open wound. This is perhaps a counsel of perfection, but we need not fall far short of it—and that without sacrificing much time—if we cultivate the habit with the ideal in view. With a little practice it is quite easy to acquire the art of mopping, sewing, and ligating entirely with forceps. Incidentally, the economy in ligature material will be considerable, for no less than six knots may easily be tied with forceps with a length that will only allow one to be tied with the hand.

FIG. 1.



Modified Patiala scissors.

As aids to the non-touch technique the following instruments will be found useful. Most of them come under the category of "combined instruments." For suturing wounds the surgeon can have nothing better than a Lane's dissecting forceps in the left hand and scissors of the Patiala pattern in the right.

FIG. 2.

Forceps and knife combined.

With the tenaculum points of a Lane's forceps tissues can be picked up and adjusted to a nicety, and with its serrated surfaces well in contact ligatures or needles may be securely held. The original pattern of Patiala scissors is not quite suitable, but

FIG. 3.

Scissors and forceps combined.

Gillies's or my modification (Fig. 1) suit the requirements well. It is a needle-holder and scissors combined, and the surgeon who once gets used to it will not be likely to give it up.

The instrument best adapted to an assistant is one that combines the properties of a forceps and a cutting instrument. I have devised two types.

1. *A forceps and knife combined*, in which a Bard-Parker or other removable blade is slipped on to a special device at the end of a Lane's dissecting forceps (Fig. 2). It should be held with the edge of the knife looking in the direction of the finger-tips. The blade should not be pointed.

2. *A scissors and forceps combined*, in which the forceps are made as an extension of the bows (Fig. 3). It should be held with the fingers in the loops, but

FIG. 4.

Selvaduria's ligature holder.

more in the manner of forceps than scissors, and with the convex surface towards the palm, so that the forceps ends project out. When thus held the same grip ensures its easy use either as scissors or forceps. With either of these two instruments an assistant can pick up a mop for swabbing, adjust wound edges, hold a running ligature taut, or cut a ligature. Of the two, the second is much the more serviceable and satisfactory.

For threading needles of the Reverdin type, such as the modification of Wu and Bonney, a useful instrument is the U-shaped forceps designed by my former house surgeon, Mr. David Selvaduria (Fig. 4).

Messrs. Down Bros., London, S.E., are the makers of all these instruments.

A CASE OF
HUMAN INFESTATION WITH LIVER FLUKE.

BY S. W. PATTERSON, M.D. MELB., D.SC., M.R.C.P. LOND.,
PHYSICIAN AND BACTERIOLOGIST, RUTHIN CASTLE, NORTH WALES.

IN man the liver fluke (*Fasciola hepatica*) is a rare parasite, only 28 cases of infestation having been recorded in the literature up to 1915.[1] The early cases were discovered at autopsy; the first described being by Pallas in 1760 in a female in Berlin. The infection was mostly mild, and no symptoms or only trifling ones were present. In other cases a severe infection may lead to death; the symptoms, enlargement and painfulness of the liver, merely pointed to a disease of the liver. Of the 16 cases reported up to 1902 (Duffek [2]), jaundice occurred in three only.

In the present case the patient was a man, aged 43, who had been for nine months in West Africa in 1912, but had had no illness then or at other times except scarlet fever in 1910, influenza in 1918, and a pneumococcal septicæmia following infection at operation in 1924. The illness started at the beginning of November, 1927, with chills and mild rigors; the temperature, normal in the morning, would rise to 102°–103° at night followed by sweating. In addition to general malaise, there was an uncomfortable feeling in the upper abdomen, not related to food, and an irritating spasmodic cough which sometimes brought on vomiting. The patient went to a nursing home in Liverpool, where no abnormality was found except a leucocytosis of 18,000 per c.mm. with 11,000 (62 per cent.) eosinophil cells. The fever subsided, but discomfort in the abdomen continued, and at times severe attacks of colic occurred. There was no jaundice.

When seen at the beginning of January of this year ordinary physical examination revealed nothing abnormal; but the blood showed a leucocytosis of 14,700, of which 6200 (42 per cent.) were eosinophils. X ray examination was negative, except that the gall-bladder was not normally filled after the administration of iodeikon, and the faint shadow obtained appeared mottled. The watery stools after Epsom salts contained numerous ova of *F. hepatica*. The treatment adopted was non-surgical biliary drainage by drachm doses of 50 per cent. magnesium sulphate twice a week on an empty stomach, increasing doses of hexamine with bicarbonate of soda, and intravenous injections of stibosan, a preparation of tartar emetic.

The abdominal symptoms disappeared and the patient is well; the blood, however, shows still moderate eosinophilia, and ova are found in the stools when concentrating methods are used (see table).

Date.	Total leucocytes.	Eosinophils.		Ova in stools.
1927.	Per c.mm.	Per cent.	Per c.mm.	
Dec. 6 ..	18,000	62	11,000	..
1928.				
Jan. 5 ..	14,700	42	6,200	++++
,, 16 ..	9,400	30	2,800	+++
,, 28 ..	9,000	22	2,000	+++
Feb. 10 ..	6,400	10	640	++
,, 19 ..	5,100	13	660	++
,, 26 ..	6,800	4	272	++
Mar. 11 ..	6,800	9	612	+
,, 25 ..	12,000	16	1,920	+
Apr. 4 ..	10,000	8	800	+
May 2 ..	8,800	10	800	+
,, 16 ..	8,800	7	600	+
Aug. 8 ..	8,000	4	320	..

The following points are of interest in the case:—

1. *Diagnosis.*—As has been said, the diagnosis was made at autopsy in the early cases described. The ova can be found in the fæces, as in Ward's case [3]; but adult flukes would probably be digested during their passage through the alimentary canal. Clark [4] has found flukes in the pus at operation on empyema of the gall-bladder. Complement fixation has been described in liver fluke infections in sheep,[5] but as far as I know has not been applied in man. In the present case the symptoms pointed to cholecystitis with colic; the abnormal condition of the gall-bladder and the eosinophilia were explained by finding the characteristic ova, which are oval in shape, 140–160 μ long and 80 μ broad.

2. The high degree of *eosinophilia*. This is found in worm infections, especially during the invasion stage. In Ward's case [3] the eosinophils were 3700–6000 per c.mm., and up to 41 per cent. of the total leucocytes. Lawton [6] in Egypt found an eosinophilia in some cases of pyrexia of unknown origin (P.U.O.), which when traced afterwards were shown to be

infected with bilharzia. Dévé[7] and later Dew [8] found a marked eosinophilic reaction of the endothelial cells and leucocytes round the growing hydatid cyst in the livers of artificially infected pigs.

3. The *mode of infection* is usually by impure water or infected uncooked vegetables, such as watercress. In Duffek's case,[2] as in the present one, the infection began in October or the beginning of November, and the summer of 1901 like that of 1927 had been very wet and liver fluke had been a common disease of the sheep in the districts in which the cases occurred. As early as the fourteenth century the disease in sheep was described by Jehan de Brie [9] in his book on "the whole art of shepherding." "Traicté de l'estat, science et pratique de l'art de Bergerie, et de garder œilles et brebis à laine," published in 1379, and presented to the learned King Charles V. Chapter xxviii. of this book deals with "Dauve, a small herb (*Ranunculus lingua* and *R. flammula*) which by corruption when eaten engenders a sort of worm, which gets into and destroys the liver. Therefore the shepherd must keep his sheep away from marshes and low pastures in the month of March." It is now known that the infection is carried by water and uncooked vegetables, and that the pond snails (*Limnaeae*) act as intermediate hosts.

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6. Lawton: Med. Jour. Australia, 1917, ii., 247.
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A CASE OF
RUPTURE OF THE ŒSOPHAGUS BY INDIRECT VIOLENCE.

BY J. R. MURDOCH, M.B. EDIN.,
FIRST ASSISTANT MEDICAL OFFICER, NORTH MIDDLESEX HOSPITAL, N.

THE following case of rupture of the œsophagus seems worthy of record:—

A boy, aged 6 years, was admitted to the North Middlesex Hospital after having been knocked down and run over by a motor-cycle. When seen on admission he was quite unconscious, with hæmorrhage from the nose and mouth. He died a few hours after admission.

Post-mortem examination revealed marked bruising of left chest wall and over left hip-joint, extensive bruising of scalp on left side, and a comminuted fracture of left humerus. The heart, larynx, and trachea were normal. Left pleural cavity was partially filled with dark reddish-brown fluid containing small particles of food. The base of the left lung was collapsed and very congested. No ribs were fractured, and the right pleural cavity and lung were normal.

A longitudinal tear was found on the left side of the œsophagus ¾ in. above diaphragm and 1¼ in. long. There was also a slight rupture of the diaphragm around the œsophageal opening. The œsophageal wall was extremely thin. The abdominal organs were all normal with no signs of injury. A large fracture of the skull was found running from the vault on the left side down into the left middle fossa, and there was an extensive extradural hæmorrhage on the left side.

It would appear from the examination of this case that the motor-cycle wheel passed over the boy's chest and in this way stretched the diaphragm around the œsophageal opening, with the resulting rupture of the diaphragm and the œsophagus above it. A few cases of spontaneous rupture of the œsophagus have been recorded and usually the tear has been longitudinal, but very few cases of rupture by indirect violence can be found in the literature. In this case the œsophageal wall was extremely thin, but showed no evidence of gross disease in any part.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF TROPICAL DISEASES.

AT a meeting of this Section held on Dec. 6th Dr. J. G. THOMSON took the chair, and a discussion on

CLINICAL AND PATHOLOGICAL CORRELATION IN TYPHOID AND ALLIED DISEASES

was opened by Dr. H. H. SCOTT, who illustrated his points by relating cases from his own experience. Typhoid, he said, was such a protean disease that the typical symptoms might be either in abeyance or so overshadowed by some symptom or syndrome that the true nature of the malady might escape the doctor. Sometimes these anomalies might be accounted for in the post-mortem room. The first anomalous group was that marked by unusual modes of onset or in which some prominent symptom led the observer off the scent. He gave three examples of this: (1) *Onset with a chill.* He had seen a white woman of 27, eight months pregnant, who had got up quite well in the morning and had a shivering fit at 10 A.M. which had lasted for an hour. At the end of it labour had begun and a healthy infant had been born. The mother had then gone on to typical typhoid fever. In another case—which would also serve as an example of pneumotyphoid—a native boy of 19 had been ill for several days before he saw the doctor, and by that time he had all the signs of lobar pneumonia. Consolidation had been found post mortem, but so also had typhoid ulcers. (2) *Signs of peritonitis.* A native of 20 had died with the signs of general peritonitis. At autopsy the peritonitis was found to be the result of perforation of a typhoid ulcer. The lad had apparently felt no serious discomfort before the perforation. (3) *Ambulatory Forms.* There was no doubt that the man who kept about in the early stages of typhoid was running a very grave risk; the mortality-rate was largely kept up by these cases. Dr. Scott illustrated this type from his own attack of typhoid. After ten days of severe headache and rising temperature he had examined the agglutination of his serum, but it had been negative, and was again negative five days later. On the seventeenth day of the illness, with a temperature of 103·6° F., he had had to travel several miles to give evidence in court, and had gone to bed on his return. So severe had the attack been that the temperature was not normal until the sixty-third day. The blood had given no reaction until the second relapse on the forty-eighth day.

The second group of anomalous cases was that in which special symptoms or unusual complications appeared. The first type was the *nervous* one. True meningitis might occur, more often serous than suppurative. He had seen a hemiplegic negro in whom the brain had been found normal post mortem, but typhoid ulceration had been present in the intestine. A Canadian man had developed local neuritis of both legs in his third attack of typhoid—a very severe one with two relapses, three severe hæmorrhages, and a temperature of 105°–106° for six days. He had had very tender toes and excruciating pain in the calves and feet. Two years later there was still abnormal fatigability and numbness. The second type was when *peculiar forms of fever* occurred. He had seen three afebrile cases, all exceptionally severe, and inverse and intermittent fever. Anomalous temperature charts might be the result of multiplication of the bacillus in the meninges, the kidney, or the biliary system. The third was masking of the basal condition by *coincident disease.* Typhoid might occur in a tuberculous patient or might localise early in the lungs, and tuberculosis might simulate typhoid. In malarial subjects the advent of typhoid might be preceded by paroxysms indistinguishable from ague, except that quinine did not check them. Any disease supervening on malaria was apt to assume an inter-

mittent or periodic character. Typhoid and malaria might simulate each other. The coincidence of the two was an interesting example of the antagonism of diseases—a principle now used therapeutically in the malarial treatment of general paralysis. He showed temperature charts illustrating the extreme mildness of typhoid fever in malarial patients; the trouble had been to keep them in bed. Yet they had occurred in a country where both typhoid and malaria were very severe, had a high mortality, and—occurring alone—caused prolonged illness and marked debility.

Dr. H. B. DAY reviewed the course of the typhoid infection from the pathological point of view. Mallory, 30 years ago, had shown that the reaction of the host was due to a proliferation of the reticulo-endothelial system, so that there was an aggregation of macrophages in the lymph nodes and vessels. The first clinical symptoms were due to the increase of toxic products in the circulation at a rate greater than could be neutralised or eliminated. The clinical symptoms at the end of the first week were due to the reactions of the body to bacilli in various parts. The reticulo-endothelial cells succumbed, necrosed, and became immeshed in fibrin.

Laboratory Tests.

The progressive leucopenia corresponded to the lack of attraction of the typhoid bacillus for polymorphonuclear leucocytes. Macrophages were not seen in an ordinary blood film, as they were ruptured. Urine tests were not sufficiently elective to be of much diagnostic value. Blood culture was usually positive in the first week, and might remain so up to the fourth week. It was the best means of positive diagnosis and there was no evidence that it failed in vaccinated persons. As only small numbers of bacilli got into the blood at any one time the results could not be uniformly successful; 80 per cent. was the highest success claimed. Stool and urine cultures were not conclusive, but could be tried later than blood culture. Carriers might cause a wrongful diagnosis, and on the other hand a genuine case might be missed, as the typhoid bacilli formed such a small proportion of the total flora of the stool. The Widal serum test was still the most convenient when a laboratory was not at hand, though it might be misleading in carriers and the recently vaccinated. Dudgeon had shown that fresh stimulation led to an increased yield of any antibody with which the body had previously been reacting—this was the principle of "protein shock," an unhappy term since the toxic antigen was certainly non-protein. The test might not be positive until late in the disease. The serum should be examined as early as possible, so as to be able to show a negative test turning positive. The agglutination reaction was the outward and visible sign of a chemical change. The typhoid antigen was readily absorbed by the blood elements and only freed by their disintegration. If the majority of it were soaked up by the macrophages the reaction might be negative.

Dr. P. MANSON-BAHR described his experience of work on typhoid in Gallipoli. It might not be possible to diagnose by the agglutination reaction a paratyphoid A infection until convalescence in a patient who had previously been inoculated against typhoid. During the war they had had to rely more and more on hæmoculture, although 80 per cent. of correct results was not often achieved. The urine test was very valuable in the second and third weeks, but he was less optimistic about fæcal culture. Often these well-tried servants of clinical medicine failed when they were most expected to succeed, and the man who specialised in fevers must also be a clinical pathologist and must never neglect the evidence of his eye, his stethoscope, and his finger. Marris's test had rather fallen into disfavour, but was most useful if conducted with proper precautions, as laid down by Marris. None of the typhoid-paratyphoid infections was dead in this country.

Clinical Features.

Dr. E. W. GOODALL said he was impressed by the uniformity of typhoid; wherever it was encountered it was the same disease. He could parallel from his own experience every one of Dr. Scott's cases. Pneumonia headed the list of mistaken typhoid diagnoses in every fever hospital; it might be accompanied by diarrhœa, abdominal pain, and enlargement of the spleen. He urged the importance of more coöperation between clinician and pathologist. He had tried typhoid serum, typhoid toxin, and injections of dead bacilli therapeutically, and in each case had had a few patients who reacted by a sharp rise of temperature and a rigor, and then had lost their fever and recovered. He thought, however, that these measures should only be tried in severe cases. There had been a remarkable decrease in the incidence of typhoid fever since he had started work at a fever hospital. Paratyphoid B infection was very mild compared with typhoid, and for the sake of the prognosis it was always worth while to differentiate them serologically.

Dr. A. CAWADIAS said he had seen many cases with sudden onset, accompanied by rigors, in Paris and Athens. In Paris this onset was due to defective immunity and indicated a grave prognosis; in Greece it was due to the malarial soil and patients did well. Simple typhoid vaccine produced very marked reactions in patients who had had malaria and also awakened their malaria; he had given quinine after typhoid inoculation as a routine in Greece. He did not think typhoid was more benign in the malarial patient. He mentioned a form he had seen—chiefly among children—associated with intense diarrhœa and very severe symptoms; post mortem there would be intense ulceration of the colon, resembling dysentery or paratyphoid. He thought this was due to secondary auto-infection by the putrefactive bacteria, giving an appearance of colo-typhoid. In Greece the agglutination test could not be relied on as so many people had had typhoid already. He had tried many treatments; vaccines never gave definite results, and the physician who used them always had before him the ghost of the negative reaction. He advised adherence to the classical methods.

Lieut.-Colonel W. B. ALCOCK said that the laboratory worker must join forces with the clinician. Paratyphoid B simulated pneumonia more often than typhoid. He had once recovered the typhoid bacillus from an abscess of the thigh and it was not uncommon in the muscles. Gallipoli cases had been very mixed infections—typhoid, Shiga, and *Amœba histolytica*. He had seen five infections in one man. He did not do agglutination tests to titre because of the zones of inhibition.

Dr. SCOTT, in reply, said that a colon infection was not necessarily dysenteric; it might be paratyphoid B, which could simulate dysentery very closely.

Dr. DAY, in reply, pointed out that a relapse might be due to excretion of bacilli with the bile. Vaccine treatment remained experimental and the whole subject of immunity needed transferring from the study of the blood to the study of the tissues.

ROYAL ACADEMY OF MEDICINE IN IRELAND

SECTION OF PATHOLOGY.

A MEETING of this Section was held on Nov. 30th when Dr. T. T. O'FARRELL, the President, exhibited a specimen of

Bothriocephalus Latus.

It was, he said, the third which he had encountered, the previous ones being recorded in 1916 [1] and 1918.[2]

The patient, a man aged 36, from whom the specimen was obtained, was born in County Leitrim, where he spent the first 14 years of his life. He subsequently lived in Belfast (10 years), Blackburn, England (3 years), and Belfast again (3 years). He frequently returned to his original home on vacation though he had never been abroad. Seven years ago he passed segments of a tape-worm (not identified). In September, 1928, he passed more segments, and was treated with filix mas, after which he passed the

[1] Trans. Roy. Acad. Med. Irel., 1916, xxxiv., 272; see THE LANCET, 1916, i., 466.
[2] THE LANCET, 1918, i., 570.

present specimen which appeared to be the entire worm, though the head was not recovered.

The patient never exhibited any noticeable anæmia. A blood examination in November gave the following figures: red cells, 4,440,000; hæmoglobin, 96 per cent., colour-index, 1·0; white cells, 9280. Stained films showed slight anisocytosis with an occasional microcyte but no poikilocytosis. No nucleated red cells were found. The differential leucocyte count per cent. was as follows: small lymphocytes, 20; large lymphocytes, 14; hyalines, 10; polynuclears, 52; eosinophils, 2; basophiles, 2.

As in the other cases from the County Leitrim area, said the President, there was practically no anæmia and no eosinophilia. The patient had eaten freely of fresh-water fish, including pike, and also had an unusual predilection for raw meat.

Dr. J. T. WIGHAM said he thought the patient must have eaten raw fish, as he did not think that cooked fish caused the worm to appear. He thought that the host must be some animal other than man, or else the worm would have died out.

Dr. J. SPEARES asked if the head of the worm had been found, and, if so, whether there had been difficulty in finding it.

The PRESIDENT, in replying, said that the patient stated he never ate anything but thoroughly cooked fish, but it was evident that this was not the case. He thought it possible that this worm was fairly common and should be treated as an ordinary tapeworm. The head of the worm had not been found, and he personally was not satisfied that the worm had gone.

Dr. SPEARES read notes on a Case of Cancer in the Lung, and Mr. F. J. HENRY reported a case of Lymphosarcoma, specimens in each case being demonstrated by Dr. Wigham. Dr. A. B. CLERY showed an Adenoma of the Breast, and Dr. R. A. O. O'MEARA read a paper on Boveri's Reaction on the Cerebro-spinal Fluid.

Reports and Analytical Records.

STANIFORM.

(WHIFFEN AND SONS, LTD., CARNWATH-ROAD, FULHAM, LONDON, S.W.)

STANIFORM is a proprietary name for methyl stannic iodide. This new therapeutic agent is supplied (*a*) as an ointment consisting of vaselin with which is incorporated 2 per cent. of methyl stannic iodide, and (*b*) as a dusting powder composed of talc mixed with 5 per cent. of the iodide. On analysis figures rather lower than these were obtained owing to technical difficulties incidental to the analysis of so volatile a material. Methyl stannic iodide is a bright yellow crystalline powder practically devoid of odour, and possesses the advantages of not staining fabric. It has the formula $SnCH_3I_3$, and the specimen sent to us was of 95 per cent. purity, the balance probably being moisture. It is interesting to note that the molecule consists of 23 per cent. of tin and 74 per cent. of iodine.

Staniform is antiphlogistic, analgesic, and antiseptic in its properties. The use of tin is well known in staphylococcic infections and here it is combined with the potent germicidal properties of iodine. Staniform is of considerable benefit in local inflammations, and is claimed to induce an immediate soothing effect with rapid healing.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—The annual business meeting of this society was held on Nov. 22nd, with Dr. Thomas Fraser, the retiring President, in the chair. The following office-bearers were elected:—President: Prof. Alexander Low; Vice-President, Dr. Charles Forbes; secretary, Dr. Harold Edgar Smith; treasurer, Dr. Robert Richards; editor of transactions, Mr. George Herbert Colt. The following were elected members of council: Dr. John Farquhar Christie, Dr. George Rose, Dr. William Brown, Dr. William Clark Souter, Dr. Frederick K. Smith, Dr. George Swapp, Dr. John Smith, and Dr. Thomas Fraser. Prof. Low was invested and installed in office.

Reviews and Notices of Books.

DISEASES OF THE INTESTINE

Including the Liver, Gall-bladder, Pancreas, and Lower Alimentary Tract. Third edition. By ANTHONY BASSLER, M.D., F.A.C.P., Consulting Gastro-enterologist, St. Vincent's Hospital, New York City. Philadelphia: F. A. Davis Company. 1928. Pp. 905.

THERE are two methods of producing fresh editions of books on a rapidly developing subject. Either the whole work is cast into the melting pot, with the result that practically a new book is produced, or, additions are made here and there, and extra chapters written, to bring the contents up to date. Prof. Bassler has adopted the second method in the third edition of this work which has the disadvantages associated with the sewing of new patches on old garments. But his main idea of studying digestion below the pylorus as a whole is such a good one that these are soon forgotten. The first 200 pages cover a brief study of the anatomy, physiology, and chemistry of the alimentary canal, from pylorus to anus, with a short description of clinical examination, history-taking, radiography, and the investigation of duodenal contents, stools, &c.; the technique of the tests mentioned being briefly described. A fine discrimination is exercised in estimating the value attaching to clinical examination on the one hand and ingeniously devised tests on the other. Thus while a warm tribute is paid to Vincent Lyons for his work on non-surgical biliary drainage, the author advises physicians not to depend on this or any other method of diagnosis alone, and not to lay too great stress on its significance when estimating the pathology of the gall-bladder in any individual patient. The book embodies the clinical experience of a highly trained and careful observer and herein lies its chief appeal. The opinions and theories of others are clearly set out, but again and again the author falls back on what he himself has seen, felt, or noted. Having supplied the data, Prof. Bassler argues the case with the reader in a logical way, and even where he does not carry conviction, he provokes thought. Nearly a hundred pages are devoted to "chronic excessive intestinal toxæmia," and include a long and detailed description of the fæces found in this condition; the reason for this becomes clear in the discussion on treatment, for Prof. Bassler believes strongly in autogenous vaccines. Much doubt has been thrown lately on the reliability of fæcal cultures; if they are to be of value, they require a technique beyond the powers of any but specially trained workers. It may be noted in passing that, with the exception of some of Prof. Bassler's own articles, the references at the end of each chapter all date from before 1920. It is especially to be regretted that so little mention is made of recent work on this side of the Atlantic. To quote but a few instances, the omission of D. P. D. Wilkie's work in connexion with the gall-bladder and duodenal ileus, of that of E. I. Spriggs and O. A. Marxer on diverticulitis, and of van den Bergh and J. W. McNee on jaundice will puzzle British readers. The sections on radiology are on the whole particularly good, but we noticed no mention of the need of rotating the patient to get all parts of the bowel in profile. The radiograms reproduced are carefully selected and well produced, but are arranged without much method. Thus there is no uniformity in the position of the patient relative to the reader whose right side may or may not coincide with the patient's right side. These are small blemishes and the discriminating reader will find the work a useful addition to his library. It is characterised by common sense and an observance of established principles, and, while the author advocates the views he holds himself, he is not intolerant of those advanced by others.

DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE.

Third edition. By Sir KENNETH GOADBY, K.B.E., L.R.C.P., M.R.C.S., L.D.S., Lecturer on Bacteriology of the Mouth, Dental Department, University College Hospital. London: Humphry Milford, Oxford University Press. 1928. Pp. 412. 42*s*.

THIS book affords a useful conspectus of dental disease for the doctor, and at the same time provides the dental reader with a good account of oral conditions. The chapter on general diseases originating from mouth affections has been revised and considerably improved. A few fresh illustrations have been added to other sections of the book. Here and there are minor alterations in the letterpress but otherwise the changes in this edition are slight. In the chapter on periodontal diseases there is no reference to the work of B. Gottlieb and H. K. Box which has considerably modified our views on the pathology of pyorrhœa. The brief account of lymphatic leukæmia might well have included a reference to the fact that there is a serious liability to intractable hæmorrhage from the mouth in this disease; a considerable literature has now accumulated to show that many of the cases of fatal bleeding after tooth extraction have really been due to lymphatic leukæmia and that the oral sepsis which made the extractions necessary is itself a manifestation of the leukæmic condition.

The book ranks as an important contribution to stomatology.

SPECIAL MEDICAL PATHOLOGY AND THERAPY.

Strümpell-Seyfarth Lehrbuch der Speziellen Pathologie und Therapie der inneren Krankheiten. Twenty-seventh edition. By CARLY SEYFARTH, M.D., D.Ph., Professor für innere Medizin der Universität, Leipzig. Leipzig: F. C. W. Vogel. 1928. Vol. I., pp. 872. Vol. II., pp. 989. M.25 each vol.

Prof. Seyfarth has revised for the third time since the death of Strümpell this excellent and comprehensive manual, which has been famous since 1883. We are not surprised to learn that it has been translated into English, French, Italian, Spanish, Greek, Turkish, and Japanese, with a pirate edition in Russian. In the twenty-seventh edition the sections on dysentery, septicæmia, tetanus, asthma, pulmonary tuberculosis, pyelitis, and pernicious anæmia have been rewritten. The total bulk of the book remains the same, partly because more sections have been put into small type. It is illustrated by 384 pictures and 16 plates; 93 of these are new, and have chiefly replaced old ones. Most of the illustrations are so well chosen that they command attention; for example, a coloured picture of the smooth atrophy of the tongue in long-standing pernicious anæmia conveys a wonderfully accurate impression of that condition. There are many other clinical photographs and radiograms of which the same may be said. The treatment of each subject is, wherever possible, primarily from the standpoint of its morbid anatomy. Some topics are well served by this method. For example, we are told in a brief paragraph that mesaortitis syphilitica is most marked at the beginning of the thoracic aorta and ends abruptly, is discovered by fine longitudinal creases in the intima with irregular flat bluish-white thickenings which may obstruct the coronary orifices, and that histologically the main change is inflammatory. The complications are then discussed, and there follows a description of clinical types, radiological appearances, diagnosis, and treatment. Other types of arterial disease are dealt with in the same thorough manner; but surely a compatriot of Pick should revise the statement that miliary aneurysms play an important part in cerebral hæmorrhage! The section on tetany has been brought up to date so that overventilation and parathyroid extracts are given a place. The clinical descriptions are excellent, and the accounts given of endemic tetany and "die Arthrogrypose" are so realistic that the English reader who has probably never seen them is well able to visualise them. Similarly, the cataract of post-operative tetany is graphically described. But it is hardly true that in tetany the serum calcium is always diminished. For ourselves we would be happy to find the pathology so simple. In the present state of our knowledge the classical German method of starting with morbid anatomy is not appropriate to this section of the book, and it should be rewritten on the basis of a chemical classification in which tetany with low serum calcium should be clearly differentiated from tetany with alkalosis. The sections on gigantism, eunuchoidism, pineal tumours, and the adrenal-genital syndrome are well written, and that on hypophyseal cachexia (Simmondssche Krankheit) is a welcome addition.

The paper, printing, and indexing are alike admirable. We heartily recommend this publication to all who are seriously interested in medicine, and we can only wish that in its forty-fifth year it may again be translated into English.

ULTRA-VIOLET RADIATION AND ACTINOTHERAPY.

Third edition. By ELEANOR H. RUSSELL, M.D., B.S., and W. KERR RUSSELL, M.D., B.S., Hon. Director, Sun-Ray Clinic, Newcastle-on-Tyne. Edinburgh: E. and S. Livingstone. 1928. Pp. 648. 21*s*.

IN its third edition this work has been much enlarged and has assumed a more ambitious character. It is no longer a concise introduction to actinotherapy, but a review of the physical and biological facts on which actinotherapy is based and of its clinical application. Since at present only a bare nucleus of facts have been generally accepted in this branch of therapeutics, it is perhaps premature to attempt to embody recent work, which still lacks confirmation, in a text-book, especially where limitation of space does not permit of critical discussion. The authors do not always make it clear whether their statements are based on their own experience or on the deductions of other workers; this is unfortunate, especially when they deal with controversial matter. In the clinical section they give illustrative cases from their own practice; if space had permitted survey of their cases as a whole, under the heading of each disease treated, it would have been a useful addition to this chapter. The book contains clear descriptions of lamps and apparatus, and many illustrations and useful diagrams. It will prove of value to anyone engaged in the study of actinotherapy.

THE DERMATERGOSES OR OCCUPATIONAL AFFECTIONS OF THE SKIN.

Third edition. By R. PROSSER WHITE, M.D., C.M. Edin., M.R.C.S. Eng. London: H. K. Lewis and Co., Ltd. 1928. Pp. 734. 35*s*.

EVERY chief of a dermatological clinic is aware that a growing percentage of his material is the result of irritation from dust and liquids; he is, indeed, often requested either by the patient or his medical attendant to give testimony to this effect. Some conception of the enormous scope of occupational affections of the skin to-day may be gathered from the index to this treatise, which occupies more than 200 of its 700 pages. The bibliography quoted is immense, and there are references to current literature on nearly every page of the letterpress. Such a method of handling the subject provides the reader with a most valuable encyclopædia, and one which will doubtless continue to be in constant demand by insurance companies and in the law-courts. This exhaustive method has its corresponding disadvantages. Such a well-documented treatise does not make a readable book. Moreover, over-emphasis, many italics, and the too frequent use of a thick type defeat their object of stimulating attention. As far as can be ascertained from a short survey of the contents there is no known external cause of cutaneous or mucocutaneous irritation which has escaped discussion or

at least mention; those who want more details can find them easily by referring to one or more of the original papers quoted in the footnotes. The twelve chapters deal successively with the action of physical agents (such as water, light, and X rays), acids, alkalies, metallic salts, the hydrocarbon series, mineral and vegetable dusts, special trades, synthetic dyes, plant irritants, and dermatitis due to animal and mould infections. Finally there is a useful section on war dermatoses. The meticulous industry of the author and his assistant, Miss Anne Newbold, is admirably illustrated by the article on the irritant gases which is not included under war dermatoses. This article alone would make the book a valuable and almost indispensable addition to every dermatological library. The illustrations, most of them reproduced from actual photographs, are technically perfect, but the lawyer and even the practitioner should be wary of basing an opinion on the clinical evidence afforded from these, for a "dermatitis artefacta" may show even less concrete and standard manifestations than the classical lesions in the field of dermatopathology. The author concludes with a full glossary of (mostly) dermatological terms, for which even the more expert reader will be grateful, since terminology has always been a stumbling-block in the study of skin diseases.

The book has passed through three editions since it first appeared in 1915; there have been two American impressions and a Russian translation. Dr. Prosser White deserves this success, for there are few more complete compilations in any special subject in the domain of British medicine.

THE DIAGNOSIS OF CHILDREN'S DISEASES.

Second (English) edition. By Prof. E. FEER, Zurich. Translated by C. A. SCHERER, M.D., F.A.C.P. London: J. B. Lippincott Company. 1928. Pp. 551. 35*s*.

THE success which we predicted for Dr. Scherer's translation of this well-known continental work is evidenced by the exhaustion of the first edition and the appearance of the second within three years. The work is concerned with clinical diagnosis, not with pathology or treatment, and consequently has required few significant alterations in the new edition. The size and form of the book have undergone little change, but numerous minor additions have been made to the text. A notable feature of the book is the excellence of the photographs, of which there are over 250. As a companion volume to a systematic text-book this work should continue to be of great value to students and practitioners.

A TEXT-BOOK OF FRACTURES AND DISLOCATIONS.

Second edition. By KELLOGG SPEED, S.B., M.D., F.A.C.S., Associate Professor of Clinical Surgery, University of Chicago. London: Henry Kimpton. 1928. Pp. 952. 50*s*.

THE aim of the writer of this text-book, as outlined in his preface, has been to present an account of practica and accepted methods of fracture treatment, avoiding fads. The principles outlined bear for the most part the stamp of common sense; the apparatus advocated is simple and practical. Where operation is advised, there is a commendable insistence upon the need for the most rigorous asepsis in dealing with bones and joints, a need not always sufficiently stressed by writers on fractures.

While the principles underlying Prof. Kellogg Speed's teaching are thus admirable, their presentation is less satisfactory. The book reads like a series of shorthand notes taken from lectures and printed without abridgement or revision rather than like the second edition of a serious work. In no section, except possibly that upon injuries of the wrist, to which those already acquainted with the author's writings will immediately turn, is there any orderly sequence. The first three chapters, which deal with general principles, leave the reader entirely confused. The essential matter which they contain could be expressed in half a dozen pages; the remainder is detail out of place. But throughout the book the same confusion is evident. The sections on head injuries, fractures of the clavicle, and fractures of the neck of the femur are particularly bad. The essential teaching is there, but it is so overlaid by repetition and confused by lack of clear arrangement that only the expert can find his way through the maze. A fictitious appearance of clarity is given by the large number of headings, which may have little reference to the matter which follows. The use of slang may be permissible, but its appearance in a text-book is an æsthetic error.

The illustrations on the whole are good. One cannot but regret that the author's very considerable experience is not presented in a more attractive form.

A COLLEGE TEXT-BOOK OF HYGIENE.

By Dean FRANKLIN SMILEY, A.B., M.D., Medical Adviser and Assistant Professor of Hygiene in Cornell University; and ADRIAN GOULD, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in the University. New York: The MacMillan Company. 1928. Pp. 333. 8*s*. 6*d*.

This book, written by members of the staff of one of the leading universities of the United States, contains material derived almost exclusively from American sources, including questionaires issued to Cornell undergraduates. During the past seven years the authors have lectured on personal and community hygiene to the students of the Cornell University in order to induce them to take steps to preserve their own health and to disseminate a knowledge of hygiene. No claim is made that the ground is covered exhaustively or even that it is mapped out in the best possible way. Admittedly, this kind of teaching must be dogmatic, but in their endeavour to be up to date, the authors have included many statements which have not yet gained the support of the best informed members of the profession. The book is consequently unsuitable as a text-book, although most of the information given therein is sound; it deals with live problems, and will prove useful and stimulating if read with caution by the already well-informed. The illustrations have been well selected.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. November, 1928.—An interesting experiment is recorded by N. H. Mummery, who inoculated 79 employed persons with anticatarrh vaccine in the autumn. Out of this group 51 per cent. developed acute coryza compared with only 25 per cent. out of a control group of 72 persons. The inoculations are thought to have been given too late in the season and so the phase of increased susceptibility synchronised with increased opportunities for infection.—Certain data are given and discussed by R. M. Hutton relating to the occurrence of respiratory disease in industry, and the deduction is drawn that the worst respiratory mortality is associated with dust and particularly silica dust. Extreme heat with sudden variations in temperature and exposure to weather are also shown to be injurious.—An inquiry is described by J. Meyers into the hazard of benzol poisoning arising from applying paint by spray. Abnormally low leucocyte counts, characteristic of this poison, were found in 29 per cent. of the men examined, while in 21 per cent. the spleen was palpable, an unexpected observation.—The occurrence of phosphorus necrosis in America is reported by E. F. Ward in the manufacture of fireworks. At three factories, among 56 females employed, 14 cases, two of which were fatal, were discovered. Some of these horrible cases are described and figured. Discontinuance of the use of yellow phosphorus is now promised by the trade. It should be prohibited by Federal Law, as in the case of matches.

THE LANCET.

LONDON: SATURDAY, DECEMBER 22, 1928.

THE KING'S ILLNESS.

AFTER more than four weeks of illness the KING'S condition still demands and obtains the first place in our thoughts. Bringing a sense of deep strain into the lives of his subjects and fellow-countrymen, it has united them by their desire for his speedy recovery. So immediate and definite a change, from the nature of the case, was more than could be expected, but the following authoritative statement addressed to the medical profession shows that this long and dangerous illness has reached a stage where there is a reasonable probability of improvement. It is dated Wednesday, Dec. 19th, at 8 P.M.

"There are signs that the KING'S illness is producing in the public mind a sensitiveness, only too natural, caused by weeks of anxiety, and producing too easily alarm and therefore distress, both of which it is most desirable to avoid. Doctors in their various spheres can do much by their knowledge to maintain hope and confidence. The present condition of HIS MAJESTY can be best understood by recalling earlier stages of this severe illness. In the first phase, gradual in its onset, there were to be noted general infection with imperfect localisation; little or no cough and only one small patch of pleuritic friction; blood culture positive (streptococcus), and an irritative state of the nervous system which produced profound distress and sense of illness. Yet with these was a wish, born of quiet courage and the habit of duty, to make light of the illness and hold on to work, thus adding to the wear and tear of the fever. Towards the end of this first phase came an accentuation of pleuritic friction which extended to the diaphragm. The second phase was one of increasing toxæmia, with dusky appearance, dry cracked tongue, periods of delirium, exhaustion—in short, a clinical picture resembling that of a case of severe typhoid fever in the third and fourth week, but with the added anxiety of attacks of dyspnœa and cyanosis, due to strain on the heart. With the next phase came an abatement of fever and some evidence of localisation. The blood culture was now negative, toxæmia was less, delirium was subsiding. The localisation in the right lung did not result at this stage in effusion as shown by puncture and excellent radiographs. A few days later, however, the temperature rose rather abruptly to a higher level, and on Dec. 12th there was evidence at the extreme right base of an effusion which had commenced between the lung and the diaphragm. Drainage by means of rib resection was performed on the same day under general anæsthesia (gas, oxygen, ether). The predominant organism in the empyema has now been established to be identical with the streptococcus found in the blood. Though the infective process has become gradually localised, its severity, coupled with the lowered vitality resulting from the length of the illness, must make the progress of healing difficult and tedious. Local sloughing, however, is less pronounced to-day and tissue reaction apparent. To stimulate vitality of tissues a brief general exposure to ultra-violet rays from a mercury lamp has been made each day since Dec. 15th. The effect of these exposures is being checked by leucocyte counts and estimation of the bactericidal power of the patient's blood. There is reason to think that this employment of the ultra-violet rays has in combination with the treatment mentioned in previous statements been beneficial.

"It is hoped that the foregoing account will help towards an understanding of the future course of the illness. It will be apparent to medical men that not only the severity and length of the infection but the exhaustion resulting therefrom must make progress slow and difficult. At the same time dangerous phases of the illness have been surmounted and there are increasingly solid grounds for hoping that recovery will result from this long and anxious struggle."

The following medical men in addition to those previously mentioned have contributed to the KING'S care during the past weeks: Sir Hugh Rigby, Dr. Francis Edward Shipway, Dr. Robert Stanton Woods, and Dr. Frank Dutch Howitt. The nurses are as before: Nurse E. Gordon (St. Thomas's Hospital), Nurse Catherine Black (London Hospital), Nurse Rosina Davies (London Hospital), and Nurse N. M. Purdie (Westminster Hospital).

DENTAL HEALTH EDUCATION.

THERE is something of a self-denying ordinance about the educational campaign carried out by the Dental Board of the United Kingdom, for the fruits of these efforts in the future should be such an improvement in the teeth of the nation that the originators will be deprived of their occupation. It is five years since the Dental Board decided to embark upon a campaign to educate the public in the importance of dental health. A committee investigated the question from November, 1923, until the following November, and early in 1925 a large and representative conference was convened at which a full and valuable discussion ensued. The details of propaganda were worked out by subcommittees, and the experience thus gained should prove useful to other public bodies who contemplate similar campaigns. The scheme may be studied in a report[1] by the Board's secretary for education, entitled Progress in Dental Health Education, 1924–28.

Films prepared for the Board, though mainly intended for juvenile audiences, are extremely well received by adults, and the returns show that copies of the films had been booked out about 120 times a year. It is found that the expense entailed prevents their being placed on regular cinema circuits for public exhibition, and their main use is for the children. Here, the Board maintains, is the most important field for educational work, and first a leaflet and, later, a book entitled Hygiene of the Mouth and Teeth have been circulated to the teaching profession throughout the country. The educational value of such leaflets is regarded as uncertain: nevertheless in connexion with the National Health Week in 1927 some 100,000 leaflets were distributed, and in 1928 more than double that number. The Board has made lectures one of the main features of its campaign. The method adopted has been to coöperate with various organisations, such as the British Red Cross Society and the Industrial Health Education Society in securing the audiences which it might otherwise be difficult to reach.

[1] Issued from the offices of the Dental Board, 44, Hallam street, London, W.

VISCERAL PAIN.

WHETHER the internal organs can feel pain is a question that has long given rise to controversy. The doctrine that they have no such sensibility seems contrary to common experience and strikes the man in the street as absurd; if he has abdominal colic he feels pain inside him, quite apart from any additional sensation referred to the body wall. Yet this same doctrine has been current for a long time. As far back as 1763 HALLER concluded that there was no evidence that the viscera were sensitive to painful stimuli, and though his views were ignored until operations came to be performed under local anæsthesia, the conception of referred pain was quite well known in England about the middle of the last century. HILTON, for instance, in 1863, suggested that superficial pain in visceral disease might be due to a central connexion between the visceral sympathetic nerves and the peripheral sensory nerves; MARTYN, in 1864, said that reflected or radiated pain was then recognised as extremely common; and in 1888 ROSS advanced the theory that there were two kinds of visceral pain—namely, the splanchnic, which was felt in the organ itself and the somatic, which was referred to the body wall. HEAD and MACKENZIE, working independently, suggested about the same time that nearly all pain in visceral disease is really felt in the superficial structures of the body. HEAD differed from MACKENZIE in that he believed that, although visceral pain was nearly always referred, there was also a low form of protopathic pain which was in reality true visceral sensation. MACKENZIE, with his flair for bold outlines, maintained that the internal organs had no pain sensibility whatever. LENNANDER, in 1901, traced the pain of abdominal disease to an extreme sensitiveness of the parietal peritoneum and of the subserous connective tissue, whilst MACKENZIE subscribed to the view that the subserous connective tissue was sensitive, but held that all serous membranes, including the pleura and pericardium, were devoid of pain sensibility.

Most observers agree that the viscera are insensitive to such stimuli as touching, squeezing, cutting, and burning which produce very definite sensations when applied to the skin and body wall. The concept of referred pain in visceral disease is also generally accepted. The explanation for divergence in views on visceral pain and sensation is probably to be found in the teaching of the physiologists that for each type of sensation there are specific end-organs, nerve paths, and sensory receptor cells in the thalamus and cortex cerebri, and further, that each type of sensation is produced by the application of a specific and "adequate" stimulus. This specificity of the sensory mechanism has been evolved and adapted to meet the needs of each part of the body and of the organism as a whole. The senses of touch, of heat and cold, taste, and hearing all have highly specialised nerve-endings, coördinated nerve paths, and receptor cells. The internal viscera are carefully insulated; that is to say, they are normally not called upon to respond to such stimuli as those which set up the special sensations and reflexes in relation to the outer covering of the body, thus bringing the individual into relationship with the outside world. LENNANDER and MACKENZIE, in their experimental work, applied to internal organs the stimuli which cause pain when applied to the superficial structures of the body, and found, as in LENNANDER'S classical experiment on the liver and gall-bladder, that such stimuli as cutting, scratching, squeezing, and burning did not evoke pain in the viscera. But, in so doing, as A. F. HURST pointed out, they failed to apply the adequate and specific stimulus. J. A. RYLE says that the stimulus required to produce pain in a hollow viscus is tension in the muscular element of its wall. He maintains that the increased tension results either from exaggerated contraction of the muscle-fibres or from their failure to relax adequately when intravisceral pressure increases; further, he holds that visceral pain when occurring alone or dissociable from attendant referred pains may be accurately localised by the patient. He regards persistent referred or somatic pain and hyperalgesia as an expression of organic visceral disease of an inflammatory nature.

It appears that tension is the specific stimulus to which nearly all the viscera respond, not only in the alimentary but in the respiratory and cardiovascular systems—a thesis illustrated by the tension theory of pleural pain recently advanced by H. A. BRAY of New York. Evidence is accumulating, too, that some forms of pain in disease of the lung are due to tension and distortion of the nerve-endings in the pulmonary parenchyma. Absence of pain has been noted when the nerve-endings have been destroyed, as in cavitation—a fact which was pointed out by HEAD in 1896. HEAD also showed that in lobar pneumonia the massive consolidation protects the nerve-endings from pressure from without or traction from within, and consequently that the pain in this condition is due entirely to involvement of the pleura. In bronchopneumonia pain may arise from the lung itself because the scattered patches of consolidation do not give the nerve-endings absolute immunity from ension. By applying the tension theory to angina pectoris POULTON, we believe, makes a valuable contribution which helps to unify the conceptions of visceral pain, as well as explaining satisfactorily the undoubted action of amyl nitrite as a therapeutic agent in this condition. His work with W. W. PAYNE leads him to suppose that all the sensations arising from the alimentary tract—such as nausea, sinking, and pain—probably have their specific end-organs. As regards the exact mechanism by which tension in the alimentary tract produces pain, there is some difference of opinion between the views set out in the Oliver-Sharpey lectures and those of CHARLES BOLTON.[1] PAYNE and POULTON think that œsophageal pain results from a stretching force in the viscus, distorting the pain nerve-endings in the œsophageal walls. This pain, in their opinion, may be relieved either by peristaltic contraction which overcomes the stretch or by postural adaptation which increases the capacity of the organ so that tension is reduced. They say that pain more often occurs during the relaxation following a peristaltic contraction than during the actual muscular contraction. BOLTON rightly points out that it is hard to imagine that there is more tension during relaxation than during muscular contraction. They agree, however, on the essential fact, that visceral pain is due to tension.

The empirical use of counter-irritation for relief of pain receives a measure of scientific approbation from the work of PAYNE and POULTON, and in recent clinical studies WEISS and DAVIS[2] throw further light on it from a new angle. They point out that the relationship between cutaneous sensation and visceral function is probably reversible. If the conception of referred pain is correct and visceral pain is caused by normal afferent impulses from the skin entering a segment of the cord which has become irritable as a result of exaggerated afferent impulses from a

[1] THE LANCET, 1928, i., 1238.
[2] Amer. Jour. Med. Sci., 1928, clxxvi., 517.

diseased viscus, it should follow that when the cutaneous afferent impulses are blocked by intradermal injections of novocaine, the referred pain will be abolished. If the pain is visceral in origin it should persist after the injections, and if visceral and referred pains are both present, the composite pain should be reduced proportionately to its referred element. They found in many forms of visceral disease that if the pain was sufficiently localised, it could be greatly lessened after infiltration of a small area of skin with novocaine. Sometimes after the cutaneous afferent impulses had been blocked, certain unpleasant sensations—but not definite pain—were experienced, and these WEISS and DAVIS regard as true visceral sensation. They suggest that the analgesic effect of paravertebral injections ostensibly designed to infiltrate the rami communicantes of the sympathetic chain is really due to blocking of cutaneous impulses going to the spinal cord; and, further, that infiltration of the skin with novocaine is a practical therapeutic measure in some pathological conditions associated with localised pain.

THE LIMITATIONS OF SANATORIUM TREATMENT.

IT is written that those who are whole have no need of the physician, but only the sick. The practice at certain sanatoriums would suggest an inversion of the text, for the patient with the demonstrable signs of disease is not wanted. It is therefore refreshing to read of an institution where all sufferers from pulmonary tuberculosis are equally welcome. Dr. P. C. Varrier-Jones,[1] in the annual report of the Papworth Village Settlement, makes it clear that his institution is not reserved for the treatment of the so-called early case. On the contrary, his object is to provide for permanently damaged lives, for "substandard men and women who cannot be employed in the industrial and commercial world." He is much more concerned with the need of the sufferer than with a reputation for miraculous cures. We are frequently told that the early case of pulmonary tuberculosis is eminently curable. This is one of those half-truths from which false deductions are constantly made. If the patient possesses a fair natural resistance, if he can command all the conditions necessary for complete repose of body and mind, if he has sufficient intelligence to understand and sufficient determination to follow the method of life necessary for a cure his prospects are hopeful. For the average industrial worker smitten with tuberculosis the prospect is well-nigh desperate. It is perhaps unnecessary to add that we are not referring to the early case whose sputum has never revealed the tubercle bacillus, to the tuberculous ex-Service man whose disease begins and ends in a series of dossiers and record cards, nor to the rare abortive types of disease whose course is self-limited whether treatment be given or withheld.

The current teaching concerning the early case involves a fallacy. The onset of pulmonary tuberculosis in the adolescent and young adult is usually rapid, and the incipient stage may give rise to neither symptoms nor physical signs. The patient has had a clean bill of health and even a routine skiagram may have shown no abnormality within a few weeks of the outbreak of serious disease. It is noteworthy how often the young patient states that the first symptoms immediately "followed an attack of influenza." Within a few weeks of the onset the sputum is loaded with tubercle bacilli, physical examination detects widespread disease, the skiagram reveals abundant areas of mottling and hazy opacities below the clavicles or external to the root shadows. It is true that modern methods of treatment, notably collapse therapy combined with a prolonged period of careful supervision, may result in permanent arrest of disease that otherwise would prove fatal. The fact is attested by records of notification and death that a majority of consumptives die within a few years after the onset of symptoms of ill-health. For those who return from a sanatorium to unfavourable home conditions the outlook is almost hopeless. When in the annual report of a well-known sanatorium we read that 85 per cent. of the early cases were discharged "fit for work" and 48 per cent. of all cases discharged were in a similar happy condition, we can only infer that diagnosis has been at fault or that cruel disillusionment awaits those who return to office, factory, or field. It is noteworthy that the report contains no reference to sputum examinations.

It is common knowledge that pulmonary tuberculosis in the middle-aged tends to run a chronic course. The sufferer from fibroid phthisis usually remains at work for long after the disease has become firmly established. But a time comes when increasing cough and loss of strength drives him to panel doctor or tuberculosis dispensary. The response to sanatorium treatment is gratifying, symptoms decline, the patient gains in weight, the temperature remains normal despite increasing exercise, and at the end of a few months' treatment he is discharged. Return to work is followed by a recurrence of symptoms—and so back to the sanatorium. The records of the dispensaries tell a tragic story of wasted effort and frustrated hope. The Ministry of Health has often stressed the need for the after-care of those discharged from sanatoriums, and this is emphasised once again in that section of the report of its Chief Medical Officer which is devoted to tuberculosis (see p. 1313). After-care, which is confined to occasional calls by a health visitor, occasional examinations at the dispensary, occasional doles from charitable committees, is futile. It is notorious that the consumptive cannot hope to find work in the open market. Yet without work he will be reduced to penury and despair. Meanwhile his family must be exposed to massive infection at a time when poverty is undermining health, and in due time a similar tragedy will be repeated in the next generation.

The village settlement with its ideal homes and sheltered trades, with its hospital wards and sanatorium where those who relapse can receive all that medical skill can effect, separated from and yet in touch with their friends, is the most hopeful experiment yet made on behalf of the tuberculous. At Papworth and Preston Hall the experiment has proved a notable success. Two arguments may be adduced against an extension of the system to other areas in the country. In the first place, schemes of this kind are very costly and require lavish endowments, and in the second, previous experiments in treatment and training elsewhere have failed. The average consumptive lacks persistence and fails to achieve the self-discipline without which restoration of working capacity is impossible. The financial difficulty is perhaps not insuperable, and with regard to the personal factor, while admitting that only the brave and determined can hope to overcome the disabilities of chronic ill-health, we may well ask ourselves whether two institutions suffice to meet the needs of all those who are both willing and able to work if work is adapted to their strength. Are we content to leave such in the dungeons of Giant Despair?

[1] Reports of the Committee of Management and Medical Director of the Papworth Village Settlement for 1927.

Annotations.

"Ne quid nimis."

THE SKELETON OF ERASMUS.

Desiderius Erasmus was born at Rotterdam in 1467, the illegitimate son of a physician's daughter, by Gerard of Tergon, who later became a monk, and the last 15 years of his life were spent at Basle, where he died in 1536. Last June his tomb in the cathedral was opened owing to the construction of a new system of central heating, and on Oct. 19th the bones were restored to their original place. In the interval they were subjected to a close study by Dr. A. Werthemann, of the Pathological Institute of Basle University, and the results were laid before the Basle Society of Natural Sciences at its meeting on Dec. 5th. The circumference of the skull measured 50·5 cm., its capacity 1255 c.cm., corresponding to a brain weight of 1200 g. This weight is small considering that the average weight in Caucasians and Chinese is something over 1300 g. That the man who stands for all time as the supreme type of cultivated common sense applied to human affairs should have had a brain smaller than the average demonstrates once again that quantity of brain substance has not the importance generally attributed to it. From the measurements of the long bones the height of Erasmus during life was calculated at 173 cm., say 5 ft. 8 in. On the left ulnar bone and on the left tibiæ a thickening was found, parts of which were examined microscopically, and diagnosed as of unquestionably syphilitic origin. The syphilitic disease of Erasmus is of the acquired type; no sign of hereditary syphilis was found. The fact of syphilisation is not in itself very astonishing. Whether or not the disease was introduced into Europe only after the discovery of America—i.e., several years after his birth—there is little doubt that in the lifetime of Erasmus syphilis had the character of a pandemic disease which was carried in many other ways than by clandestine sexual intercourse. Erasmus is credited with a constant fear of infectious diseases, and in his writings he advocated prohibition of marriage for diseased persons. It seems that he recognised the nature of his own condition, for in a letter to his friend Beatus Rhenanus, dated 1518, he described symptoms which can be interpreted as those of syphilis. Dr. Werthemann has no doubt of the identity of the bones after a careful comparison of the skull with the portraits of Erasmus by Holbein.

A SIDELIGHT ON PUBLIC HEALTH IN INDIA.

It occasionally happens that a useful light is thrown on conditions in India by visitors with little or no experience of the country, and Dr. Hoops's report on the League of Nations interchange of health officers[1] which took place in India last December and January is well worth notice. The report emphasises that public health in India is mainly a rural problem, and Dr. Hoops considers that the crux lies in the villages, where, as he says, 90 per cent. of the population live, and where there is at present no settled local organisation to deal with sanitation, water-supply, and elementary medical aid. He justly remarks that the breakdown of the *panchayats* (village councils), which has been one of the results of British administration, has left the rural population worse off in some respects than they were in ancient times, and he evidently thinks that the true interests of the country lie in the revival of these village authorities. This line is, in fact, being explored in the Punjab district of Gurgaon, and the delegates were much interested in an experiment that was being conducted there by an enterprising district officer who has succeeded not only in improving the agricultural methods and reviving village industries, but also in getting the villagers to clean up their surroundings, to admit light and air to their houses, to improve and regulate their water-supply, and even to undergo inoculation for plague and cholera, when considered desirable, in addition to the customary vaccination for small-pox. Such work is of supreme importance in a country like India, and Dr. Hoops is perhaps not unduly optimistic when he hazards the opinion that if a similar advance could be made in other districts the problem of rural health could be solved in a generation.

At the Calcutta Congress of the Far Eastern Association of Tropical Medicine, which the delegates attended last December, the recent work on kala-azar and the paper of d'Herelle on bacteriophages must have been of exceptional interest to them. Thanks to the labours of Napier, Knowles, R. O. Smith, Acton, Shortt, and others, the diagnosis and treatment of kala-azar have been so much improved that the 90 per cent. mortality which formerly prevailed has been converted into something like 90 per cent. of cures. This has, incidentally, been an excellent example of team-work, the honours being divided between the field workers in Assam and the laboratory and hospital men in Calcutta. With d'Herelle's work on bacteriophages we have recently dealt.[2] In dysentery and cholera particularly, both from a prophylactic and therapeutic point of view, the results obtained by the discoverer seem very encouraging. The bacteriophage phenomenon is at all events a most interesting biological fact, and if the hopes of d'Herelle are realised the employment of the appropriate bacteriophages in these diseases will mark a very important epoch in tropical medicine. The delegates were struck with the apparent neglect in India of drainage and other measures of mosquito destruction in antimalarial work, and this, it must be admitted, is a weak point. It is, after all, largely a question of funds, but money could hardly be better spent, and larger grants for these purposes would be amply justified by a diminished sick-rate. Attention is drawn in the report to the good effect on the general condition of the people of extensive irrigation works, and the author evidently thinks they more than counterbalance any increase in malaria, even from the public health standpoint. These observations support the contentions of C. A. Gill, who in this province has argued for some years past that the factor of general prosperity and good nutrition is one of the most important considerations in the control of malaria.

As regards general public health organisation in India, the report gives a summary of the present position, but, naturally perhaps under the circumstances, no comment is made. The fact, however, emerges that there is a somewhat excessive tendency towards decentralisation. This, no doubt, is inevitable at the present juncture, but the movement is not without its dangers. Popular government is advancing more rapidly at the periphery than the centre, and it is open to doubt whether an elected provincial council will be as ready to provide funds for purposes of this kind as it should. International considerations—including the Health Organisation of the League of Nations—will bulk more prominently in the future than they have in the past, and the central government will be well advised to maintain a general control, particularly as regards such questions as quarantine, international health legislation, research, and education.

HEREDITARY ANGIOMAS OF THE CEREBELLUM AND RETINA.

Recent work on cystic hæmangiomas of the cerebellum has brought to light a clinical syndrome that has hitherto received no general or accurate recognition. From a pathological study of two cystic hæmangiomas of the cerebellum Lindau,[3] of

[1] A Report on the League of Nations Interchange of Health Officers in India. By A. L. Hoops, M.D., D.P.H. London: John Bale, Sons and Danielsson, Ltd. Pp. 80. 5s.

[2] THE LANCET, Nov. 17th, p. 1034.

[3] Lindau, A.: Acta Path. u. Microbiol. Scand., 1926, Suppl. 1.

Lund, was led to search for similar specimens in the various museums of Europe, with the result that 15 unreported examples were assembled. In examining the post-mortem records he was impressed by the frequency with which the cerebellar cyst was associated with angiomatous and cystic lesions in other parts of the body. The lesions found included cysts of the kidneys and pancreas, adenoma of the adrenal gland, and angiomatous tumours in other parts of the nervous system. In one case it appeared that the patient had had one eye removed eight years before death for what was diagnosed as arteriovenous aneurysm of the retina. The eye had been preserved, and when it was cut and examined histologically a small capillary angioma of the retina was discovered. By this interesting disclosure Lindau was encouraged to study angiomatosis of the retina, a rare malady with a familial tendency, and he found that approximately 20 per cent. of the patients suffering from this condition had been known to have intracranial complications. Since the publication of Lindau's paper several additional cases have been reported in which cystic hæmangioma of the cerebellum was associated with cystic and angiomatous lesions in other parts of the body. Cushing and Bailey[4] re-examined the eyes of six cases of hæmangioma of the cerebellum that had been operated on at Cushing's clinic in previous years, and in one of these cases they found an unmistakable angioma of the retina that had been overlooked at previous examinations. Detailed inquiry by Fulton into the family history of this patient disclosed that the father and one aunt had died of "ruptured cystic sarcoma" of the brain.

The discovery of angioma of the retina in a patient who is suspected of suffering from intracranial tumour may now be said to have a distinct significance; it suggests that the patient has a cystic hæmangioma of the cerebellum, a benign lesion that can be removed at operation. As Cushing's case shows, the retinal angioma may be overlooked. It usually lies in the peripheral part of the retina, and it may give rise to changes, such as cyst formation, detachment of the retina, hæmorrhages, and retinitis proliferans, all of which render the primary lesion obscure. Fortunately, however, the retinal vessels passing from the optic disc to the tumour are excessively enlarged, and the artery often has a varying calibre. Such appearances call for careful examination of the peripheral retina.

Although the observations are still few in number, there is little doubt that Lindau's syndrome is an hereditary affection. Hitherto the information that any disease is hereditary has usually come from patients whose sphere of observation is limited to diseases, such as hæmophilia, that are easy of recognition. Among diseases that cannot be diagnosed by lay observers, there must be many in which heredity plays a part, and it is legitimate to expect that the more accurate pathological investigation and documentation of cases during recent years will furnish, as records accumulate, more and more evidence of the influence of heredity in disease.

HOOKWORM INFECTION IN THE STRAITS SETTLEMENTS.

A REPORT[5] has lately been made by Dr. P. F. Russell on work done during 1925–26 in determining the degree of infection with nematodes, particularly with hookworms, in the Straits Settlements. The method of diagnosis was by Willis's salt floatation technique; the covering slide, measuring 3 by 2 in., was reversed before examination, random sampling of 20 scattered fields was made, and the eggs in them counted. It is significant that in these preparations distribution of ova is apt to be irregular, while the eggs lost in reversal have been found to vary between none and three-quarters of the total which originally hung from the slide. It is then clear that Russell's statement that the method is less accurate than certain others is well founded; yet it is claimed that it suits the local microscopist, since it demands neither precision of movement nor unremitting attention, that it forms a reliable and useful guide to intensity of hookworm infection in groups of people, and that egg-counts can be made at the rate of 50 specimens daily. On the basis of these counts stools are, necessarily arbitrarily, graded into groups with 10, 30, 60, and more than 60, in 20 fields. Fifty specimens being taken as the daily limit of work possible for one local microscopist, it is calculated that to reach Clayton Lane's claim, that by the use of direct centrifugal floatation (D.C.F.) diagnosis can be made at the rate of 250,000 specimens a year for each centrifuge, 20 full-time dressers would be needed for diagnosis alone, whereas there have never been more than five in the Straits Settlements for all work. There is misunderstanding here, for Lane's method of mass diagnosis discards all counting as being unnecessary. Estimation of numbers of eggs can be carried through incidentally in D.C.F., but if this is rejected as unnecessary his mass methods would, he believes, allow of diagnosis at the rate mentioned by four men, only two of them being microscopists.

Russell's practical experience of anthelmintic treatment in the field pits itself against the rather academic suggestions of Lamson and others[6] for the immediate treatment of carbon tetrachloride poisoning. Russell urges prompt emesis and purgation with stimulant and symptomatic treatment, while as a precaution purgation must always be effected within three hours of taking this anthelmintic. The treatment advised for general use is a mixture of carbon tetrachloride (2 to 2·5 c.cm.) and oil of chenopodium (1·5 c.cm.). The criteria for the identification of hookworm larvæ are admirably put in Russell's paper. Mass treatment without coincident soil sanitation is likened to bailing a sieve-bottomed boat, universal use of a sanitary latrine constituting the only hope of eradicating infection. Yet mass treatment, it is pointed out, has two real advantages. The seeing of worms in his own stool is apt to stir the most lethargic to an interest sufficient to drive him to provide a latrine for himself and his family. Secondly, heavy infection, individual and general, is reduced, and this gain may perhaps be held until soil pollution is controlled.

THE AMBULANCE.

FROM every side, with every week, comes fresh evidence of the steady trend of the sick from home and home care to the hospital. We reviewed in our issue of last week the opinions expressed by Mr. R. G. Hogarth on the future of paying annexes to all general hospitals, and the proposed amendment in the poor-law is going to thrust on the local authorities of every district a large number of hospital beds, not all of which need be kept for the destitute sick. Everybody concerned is drawing up policies and expressing opinions, but the essential intermediate link between the "hospital case"—the patient who is ill enough to need removal to an institution—and the institution he is to seek for restoration to health is often forgotten altogether. That link is the ambulance. The sick person of the middle classes sends first of all for his doctor to come to his own house, or visits a neighbouring surgery. By the time he is diagnosed as really ill he is seldom in a fit state to walk or travel by 'bus to the hospital, and grave harm has been done by dressing a prostrate patient and huddling him into an ill-sprung and draughty taxi for the journey. A smooth running vehicle built for the purpose of conveying the sick is the only suitable way of connecting the patients' home with the hospital. We have had welcome evidence that since we commented some six months ago (THE LANCET, 1928, i., 1210) on the need of improvement in the body-work and engine of the type of vehicle used, attention has

[4] Cushing, H., and Bailey, P.: Archives of Ophthalmology, 1928, lvii., 447.

[5] Malayan Med. Jour., September, 1928, p. 113.

[6] Lamson, P. H., Minot, A. S., and Robbins, B. H.: The Prevention and Treatment of Carbon Tetrachloride Intoxication, Jour. Amer. Med. Assoc., 1928, xc., 345.

been paid to these points in many districts. The ambulances in the fleet of the Home Ambulance Service of the British Red Cross have always been comfortable and well-sprung. This invaluable servant of the community now has 352 fully-equipped motor vehicles at various stations scattered throughout the country, and the new Register, just published,[1] gives their locations in alphabetical order, and the address and telephone number of the officer in charge. It is a reference book that every country practitioner should possess. Its foreword outlines the history of the movement from the end of the war, when a large number of the Society's ambulances were still able to answer the roll call and be handed over to civilian needs. The British Red Cross Society and the Order of St. John of Jerusalem wisely decided that the call for united service did not cease with the war, and seized this opportunity to organise a fleet of rural ambulances. The vehicles are staffed by well-trained volunteers who are willing to leave their trade or business by day or by night at the call of the sufferer needing transport. Moreover, all collecting, organising, and responsibility connected with the upkeep is carried out by voluntary effort, so that the Society is able to charge a fee within the means of the patient, and to transport for nothing those who cannot afford to pay at all. A football match, a carnival, a procession, would all seem incomplete without its blue-uniformed ambulance men, but few people remember, as the familiar figures pass by, that these are shopkeepers, miners, clerks, and professional men who accept no material reward for their loss of business or leisure or for the hours they spend in initial and renewed training.

The need increases every day, and the report for the quarter ending Sept. 30th last shows that 2852 road accident cases alone were carried in the ambulances, the total number of patients moved being 705,219. The Joint Council can now state that the country is so thoroughly equipped that every part of it can be reached within a reasonable time. It is a reproach to the counties that it should go on to say that there is as yet no universal appreciation of the extent of the support that can be obtained from the public if they are approached systematically. The county areas are given great latitude in organisation and they ought to be very nearly self-supporting. Those that have not yet found out how to do it will be wise if they get their arrangements on a satisfactory basis before the increasing demand for transport of middle-class patients to hospital tempts some commercial concern to snatch from them the fees of their less impoverished clients, and thus prevent them from helping those who cannot afford to pay.

MALPIGHI.

LONDON has had many medical centenaries to celebrate this year, but it would have been a grave omission if she had failed to remember with honour the "father of microscopy," for Marcellus Malpighi had a close connexion with our own Royal Society. The tercentenary of his birth at Crevalcore, near Bologna, on March 3rd, 1628, was celebrated at the Royal Society of Medicine, under the auspices of the Historical Section, on Dec. 12th. The Royal Society had loaned a portrait in oils as well as a splendid collection of drawings from his pen, and other items from the Royal Society of Medicine's own collection and from the Wellcome Historical Medical Museum made up an exhibit fit to form the text of a memorial address from Prof. Giuseppe Franchini of Bologna. Malpighi's work was encyclopædic; he was an able legatee of the wonderful heritage left to him and his contemporaries by the revival of scientific learning and the discovery of the microscope. He investigated the development of the chick and described the formation of many of its organs; he studied the anatomy of plants and was familiar with their cellular structure and stomata; he gave accurate accounts of the germination of many seeds; he discovered the organs of taste and touch, and he published illuminating works on the internal organs of man. One of his most striking pieces of work was on the silkworm, and this he dedicated to the Royal Society, by which it was printed. He is memorable for completing the work of Harvey by his discovery under the microscope of the capillary vessels linking the arterial and venous systems. Perhaps of all his work, that on the brain was the most interesting, for he transformed it from a spongy secreting gland into a complex organ made up of little grey and white bundles. He believed, however, that the cortex was glandular and described the grey matter as hanging on the white bundles "like dates on a palm." He is commemorated in the nomenclature of the histological structure of the kidney, which he described—among others organs—in a treatise published in 1666 and entitled "De viscerum structura exercitatio epistolica." Malpighi had the receptive mind which so strongly marked John Hunter, Louis Pasteur, and other eager investigators. He idly plucked a branch from a chestnut tree and immediately the vascular bundles caught his eye, and the end of that was "The Anatomy of Plants." His description of the circulation in the gills of the tench was the outcome of another casual event. He was inexhaustible in the pursuit of knowledge, and was an exquisite draughtsman. If he failed it was in interpretation, and indeed some of the structures he depicted quite clearly have had to wait until modern times for their explanation. The work forms a curious link between the old days and the new; his microscopical research links him to our own times, yet Malpighi, as Prof. Franchini reminded his audience, lived in the days when lessons on anatomy had to be held in private houses on mouldering scraps of corpses snatched from funerals or rescued from new-dug graves at the risk of attack from relatives, guardian monks, vultures, or hungry dogs. His contemporary and friend, Bellini, was stoned by the students of Pisa, and hay and straw were hurled at the professors of Paris. Malpighi did not escape, for his colleagues incited his students against him, even to threatening his life. He was a mild and prudent man and greeted opposition with silence and magnanimity. Fortunately he lived to see his fame acknowledged; a monument was erected to him by the people of Bologna in the university building. Later the monuments, memorials, and medals in his honour became legion, and Prof. Franchini was able to show more than two dozen photographs of these indications of popular admiration. Malpighi married Francesca, the daughter of Massani, in whose house, while still a student, he had joined a "corus anatomicus" for dissection and discussion. She died a few days before him, thereby accelerating his end. From pains in his head he prophesied quite correctly his death from an apoplectic stroke which took place at the age of 66. An autopsy on his body was made by Baglivi, and only this year Prof. Franchini opened his coffin to investigate what remained of the great microscopist. All but the large bones and the vault of the skull had turned to dust.

MENTAL HYGIENE.

IF civilisation is to be preserved from the ill-effects of increasing stress, the care of the mind must become part of the training of every citizen. No organisation works more energetically towards this end than the National Council for Mental Hygiene, which completed its fifth successful year of existence last week. Its chief concern during the year was propaganda. Several local representatives have been appointed and a considerable number of meetings have been held, at which educative lectures have been delivered; a large public meeting is contemplated and a course of popular lectures on mental hygiene is to be given at the rooms of the Medical Society of London. The Council has become affiliated with the National Council of Women of Great Britain. Its report contains two valuable memoranda as appendices, one on child guidance and the other on the early treatment of

[1] Home Service Ambulance Committee, 19, Berkeley-street, London, W.1.

mental disorders as it might affect general hospitals. The latter is a well-considered scheme for approximating the treatment of early mental illness to that of physical disease; it deals with out-patient clinics, in-patient accommodation, annexes and hostels, and gives valuable advice on the requirements of these "service units." The Council has a great opportunity, now that a large number of poor-law hospitals are likely to be freed from their trammels, of influencing their reorganisation in the right direction. The movement is progressing in the British Dominions, and a scheme is on foot for founding a similar association in India. Another of the Council's activities is the attempt to secure a better place for psychiatry in the medical curriculum, and correspondence to this end has taken place with the General Medical Council.

The Council's aims are well summarised in a sentence in the report: "There is nothing spectacular about the work of the Council, which of its very nature must be slow and to a large extent unnoticed; yet if little by little it can break down the wall of doubt and prejudice which still surrounds mental ailments and can give to the public a knowledge of the resources at its disposal in combating such illnesses, and of the hope which characterises modern methods of treatment, the National Council for Mental Hygiene will have fulfilled an important part of its mission."

The popular course of lectures, which is to be held on Wednesdays during the early months of 1929, includes addresses on Dangerous Ages, Irresistible Impulse, and the Problem of Nervous Breakdown.

ENCEPHALOMYELITIS FOLLOWING MEASLES.

THE rarity of nervous complications of measles has not prevented, in fact has probably favoured, acute controversy as to their nature and origin, few cases having been available for clinical and pathological study. During the first 20 years of the present century only five cases of encephalomyelitis following measles were recorded, though some 20 million children in the British Isles must have contracted measles during that time. Since 1920, however, the incidence has increased, especially abroad, but even so it is rare for any author to have observed more than two cases. In this country a case was recorded by C. R. Box in 1921 [1] and by Winnicott and Gibbs in 1926.[2] Dr. J. G. Greenfield, speaking at the Neurological Section of the Royal Society of Medicine on Dec. 13th, commented on the cases previously recorded and described three which had come under his notice in the spring and early summer of this year. Two of the cases in which he examined the cerebro-spinal fluid were cerebral, one being spinal. No post-mortem examinations where allowed, though only one of the three patients recovered, but in another fatal case he was able to examine the brain. The clinical features in these cases coincided with those described by other observers. The cerebral type is ushered in by a recrudescence of fever, often with convulsions. Delirium, muscular twitchings, and loss of speech are often noticed. But the most constant and characteristic symptom is profound drowsiness or stupor, which is usually associated with neck rigidity, head retraction, or tache cerebrale, and often with rigidity of all the muscles of the body. Kernig's sign is also often present. The convulsions may be so severe and frequent as to lead to the death of the patient, but more often death is directly due to lung complications. The mind gradually clears, and with the return of consciousness a varying degree of damage to the brain may manifest itself in such changes of character and temperament as irritability, tendency to use bad language, and dirty habits. Usually this phase is of quite short duration, a couple of days or a week or two at most. With further recovery there is often remarkably little evidence of cerebral disturbance, but sometimes there is permanent mental backwardness. The majority of the patients have recovered completely in the course of three or four months. In the spinal type paraplegia with loss of sphincter control is the most characteristic symptom. The paralysis is sometimes of an ascending type, and is often accompanied by sensory loss, either to all forms, or, perhaps more often, to pain and temperature only. The paraplegia of measles thus differs from poliomyelitis in the constancy of severe sphincter paralysis, in the presence of sensory loss, and in the tendency for signs of pyramidal involvement, such as Babinski reflexes and hypertonicity, to appear after the acute phase has passed off. The degree of recovery is remarkable, and usually very little residual paralysis is left behind. In many cases cerebral and spinal symptoms are equally prominent and it is impossible to classify the cases. The abnormalities of the cerebro-spinal fluid are very variable. The pressure is often moderately raised in the cerebral form up to 300 mm., but is little altered in the spinal form. On the other hand, the cell count tends to be higher in the spinal form. As to morbid anatomy, the changes in the nervous system described by Barlow and Penrose were confirmed by Dr. Greenfield in his case. The changes are evenly distributed throughout the cord but are of greater intensity in some regions. In addition to great engorgement of the vessels and some scattered petechial hæmorrhages, many of the vessels are surrounded by a zone of coagulated exudation, and beyond this for a considerable distance the tissues are infiltrated with leucocytes giving the appearance in transverse sections of a series of concentric rings. No changes were found in the nerve cells. This appearance of perivascular softening with cell exudate forming a concentric zone round the vessels has also been found by Siegmund in a case of Brock's and by F. Wohlwill.[3] The most characteristic change is the zone of demyelination of greater or less width around many of the small veins. In Wohlwill's cases, however, and in Brock's there was practically no mesodermal reaction, and this variability of mesodermal reaction seems to have led to considerable confusion. The question has been raised whether it is possible to have a form of inflammatory disease of the brain in which there is no evidence of cell exudation, and certain observers have considered that the changes found in the encephalomyelitis of measles are of a purely degenerative character and are not inflammatory. But in view of the acute febrile onset of the nervous complications, the high pressure of cerebro-spinal fluid and papillœdema sometimes present, and the congested and sometimes hæmorrhagic appearance of the brain and cord, Dr. Greenfield finds that the cardinal evidences of inflammation are present.

It seems to him likely, in fact, that cell exudation is caused not by the presence of virus or toxin so much as by the effects they produce on the tissues. The presence of diphtheria toxin or tetanus toxin in the nervous system calls forth no cellular reaction, but far from being absent, it is just their presence in the nervous system which causes the symptoms of paralysis or spasm. Similarly, in demyelinating diseases such as disseminated sclerosis and Schilder's encephalitis there may, or may not, be perivascular infiltration; it is not an essential part of either disease. What is a still more cogent argument is that in post-vaccinial encephalomyelitis, which resembles measles encephalomyelitis very closely, there may be remarkably little evidence of mesodermal reaction, or it may be confined to a very small proportion of the affected vessels. The similarity of the disease to post-vaccinial encephalomyelitis is seen not only in the morbid anatomy, which closely resembles that originally described in the post-vaccinial affection by McIntosh and Turnbull and later by Perdrau. There has been a great increase in the incidence of both

[1] THE LANCET, 1921, i., 222.
[2] Brit. Jour. Child. Diseases, 1926, xxiii., 107.
[3] Zeit. f. d. ges. Neur. u. Psych., 1928, cxii., 20.

diseases during recent years; in both diseases also there is a definite delay of the onset of nervous symptoms till after the acute phase of the initial disease has passed off, and the time interval from vaccination or measles rash to encephalitis is remarkably constant. In Dr. Greenfield's opinion these facts confirm the suggestion that the virus which causes the encephalitis is not the same as that causing the exanthem, but is a special neurotropic virus which is stimulated to activity by the exanthematous disease. It is impossible to say, without further evidence, that the encephalomyelitis of measles is identical with post-vaccinial encephalomyelitis, but in the cases examined no clinical or pathological differentiation is possible. The relationship, if any, of these conditions to the other demyelinating diseases (disseminated sclerosis, diffuse myelitis, or Devic's disease, and Schilder's encephalitis) is also still unknown. In any case it seems to be established, both on clinical and on pathological grounds, that the typical lesion of the encephalomyelitis of measles is not a "hæmorrhagic encephalitis," but one of the diffuse perivascular demyelinating diseases closely related to post-vaccinal encephalomyelitis.

INTERNATIONAL HYGIENE.

THE Office International d'Hygiène Publique held its autumn session at Paris towards the end of last October, when a variety of epidemiological questions were discussed. We are indebted to Dr. Abt, the new director of the Office, for a short summary of the proceedings in advance of the elaborate procès-verbaux which will appear later in the *Bulletin Mensuel*. It is of interest that a permanent committee has now been formed, consisting of delegates of countries interested in the sanitary control of the Mecca Pilgrimage, to examine all information regarding that control each year, and to make recommendations for the better coördination of the work undertaken by the different administrations for this purpose under the terms of the International Sanitary Convention of 1926. Another forward move is the proposal to issue a comprehensive annual, giving data regarding quarantine administration in all countries. The committee of the Office has begun giving authoritative opinions on such administrative questions as the abolition of unnecessary consular visas on bills of health and deratisation certificates, the use of wireless telegraphy for quarantine purposes, the necessity of rat guards, and cognate matters. Air traffic, too, is raising new problems in the dissemination of disease, and the Office has decided to study the basis on which measures of sanitary defence should be insisted upon in the case of aircraft arriving from infected countries. The discussion at the session revealed the apprehension as to the spread of yellow fever in Africa which led to the Anglo-French Conference at Dakar in April, and a more recent agreement between the Belgian Congo and Angola for the application of special local measures in addition to those advocated by the International Sanitary Convention.

PRESENTATION TO PROF. PRIESTLEY SMITH.

A PLEASANT little ceremony took place at the Queen's Hospital, Birmingham, on Friday evening last week, when Prof. Priestley Smith was presented with his portrait in appreciation of his long association with the hospital. It was in 1867 that Joseph Priestley Smith first entered the Queen's Hospital as a medical student, after having been apprenticed, as befitted his prænomen, for four years at mechanical engineering. He thus came to his medical studies with a working knowledge of mechanics and familiar with the properties of materials, an equipment which provided the necessary background to his ophthalmological work and made it feasible for his name to become attached to all manner of appliances used in the oculist's consulting-room. Seven years after taking his qualification Priestley Smith gained the Jacksonian prize for his essay on glaucoma, and his theory of the development of that mysterious and disastrous disease still holds the field. In 1898 he delivered the Bowman lecture of the Ophthalmological Society. In 1901 he was elected F.R.C.S., joining the small group of members of 20 years' standing who have been so honoured, and in 1904, when the Nettleship gold medal was to be awarded for the first time, it was Priestley Smith who was the recipient. Finally, the American Ophthalmological Society last year gave him the Lucien Howe medal in succession to Kohle and Fuchs, after sending over a representative to see for himself the apparatus used to investigate circulation in the eye. Sir Charles Hyde, President of the Queen's Hospital, who made the presentation, remarked on the bewildering nature of Priestley Smith's achievements, which read to him like a fairy story, and, he added, "like the fairies, he does not appear to grow older." Apart from his work on glaucoma and the growth of the crystalline lens, Priestley Smith will always be associated with the study of visual function by means of perimetry, and with the educative treatment of strabismus; a tape for measuring the angle of squint and various perimeters appear in every instrument maker's catalogue. The portrait has been painted by that well-known artist and technician, Mr. Harold Speed, and is considered excellent both as a likeness and as a picture; it includes some accessories suggestive of research work. In replying to the presentation Prof. Priestley Smith asked the chairman of the hospital to accept the portrait which is to be hung in the board room.

THE Royal College of Physicians of London will be closed from Saturday, Dec. 22nd, till Saturday, Dec. 29th, both days inclusive.

THE Medical Society of London has arranged a specially interesting programme for the second half of the present session. Beginning with a pathological evening on Jan. 14th, it continues on Jan. 28th with a discussion, introduced by Dr. E. I. Spriggs, on Starvation in Treatment. On Feb. 28th Prof. A. H. Burgess and Mr. C. H. S. Frankau will open a discussion on Acute Intestinal Obstruction, and on March 11th Dr. Reginald Miller and Dr. W. G. Wyllie will speak on the Chronic Dyspepsias of Children over the Age of Infancy. At a meeting on March 25th the subject will be the Medical Indications for the Induction of Abortion and Premature Labour, the openers being Mr. Eardley Holland, Dr. B. T. Parsons-Smith, and Dr. Bernard Hart, and the session will close with the annual meeting on May 13th, when Prof. Grey Turner will deliver the annual oration, taking Cancer of the Colon as his subject. The Society's Lettsomian lectures on Dermatology in Relation to other Branches of Medicine will be given by Dr. H. W. Barber on Feb. 18th and 27th, and March 6th, and the annual dinner will take place at the Trocadero Restaurant on Friday, March 8th.

The President of the French Republic has appointed Dr. David Thomas Barry, F.R.C.S., professor of physiology at University College, Cork, to be a Knight (Chevalier) of the Legion of Honour.

KING GEORGE V. HOSPITAL.—The Lord Mayor of London and the Chairman of the London County Council have isued a combined appeal for the erection of the proposed King George V. Hospital at Ilford, which is to serve the large new population of Becontree and the neighbourhood around Ilford. Some 200,000 persons are to be housed, mainly by the London County Council, and it is expected that eventually the population will approach half a million. At present the only hospital accommodation is the Ilford Emergency Hospital of 70 beds. Both the King and Queen have given subscriptions.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXVII.—THE TREATMENT OF ACUTE HÆMATOGENOUS OSTEOMYELITIS.

BACTERIA may gain access to a bone directly through an external wound as in a compound fracture, or from a nearby focus in the soft parts; or indirectly through the blood stream from a distant primary focus (hæmatogenous osteomyelitis).

Acute hæmatogenous osteomyelitis is mainly an affection of youth, with its greatest incidence in the male sex between the ages of 2 and 15. The disease has become comparatively uncommon in recent years. The primary source of infection may be (*a*) in the skin—e.g., an abrasion, a crop of boils, or, in infants, umbilical sepsis; or (*b*) in the upper respiratory tract—e.g., tonsils, teeth, or sinuses. In not less than 75 per cent. of cases the responsible organism is the *Staphylococcus pyogenes aureus*. The streptococcus is found in about 10 per cent. of cases, and more rarely organisms such as the pneumococcus or *Bacillus coli* are isolated in pure culture.

Site.—The blood-borne infection is usually arrested in one of the long bones—the upper end of the tibia, lower end of the femur, lower end of the tibia, and upper end of the humerus being the sites of election. The flat bones are less frequently involved, but pelvic osteomyelitis is seen from time to time. In grave infections multiple foci may develop. Injury may play an important part in localising the lesion to a particular region.

Origin and Spread of Osteomyelitis.

In the *growing bone* the osteomyelitic lesion almost invariably begins in the cancellous tissue beneath the epiphyseal disc (metaphysis), a region where the end artery system and the sluggish blood stream favour the lodgment of infective emboli. From the tiny juxta-epiphyseal focus, spread may occur in various directions, but occasionally the lesion remains encysted for some days or even weeks. The earliest and most important line of spread is directly towards the surface. The pus having reached the subperiosteal space, tracks downwards along the shaft owing to the ease with which the periosteum strips. Longitudinal spread in the interior of the bone along the cancellous lining, and in the medullary canal itself, is a much later event. It is not unusual to find the whole shaft denuded, with the medullary canal still uninvaded. The attachment of the periosteum to the epiphyseal line presents a stout barrier to invasion of the neighbouring joint. In a minority of cases the infection reaches a long bone by the nutrient artery, and the initial focus develops towards the middle of the shaft (*diaphysis*). Spread then occurs in the interior of the bone in a proximal and distal direction.

In the *adult* long bone osteomyelitis may originate (*a*) in the middle of the shaft, or (*b*) in the cancellous tissue at the end of the shaft. In the method of extension certain differences are noted. When pus has reached the surface, the periosteum, which does not strip as easily as in the child, often gives way and allows widespread tracking of an abscess in the intermuscular planes. Occasionally the initial lesion becomes shut off by a zone of sclerosis with the ultimate formation of a chronic bone abscess—Brodie's abscess.

Reaction of Bone to Infection.—As the osteomyelitis spreads, its effects on the host bone are both destructive and stimulative. Destruction is signified by the amount of necrosis. But necrosis in the early stage does not necessarily imply the future separation of sequestra, for devascularised areas of cortex or cancellous bone may be integrated later in the shaft, as the infection becomes attenuated. This is part of the process of natural repair. The stimulative action of infection is well exemplified in the construction of the new case or involucrum under the periosteum, a bony shell which may ultimately house fully matured sequestra. Such extensive sequelæ are seen only in neglected cases when the infection has spread far beyond the limits of the original juxta-epiphyseal focus.

Symptomatology.

In many cases there is a *prodromal phase* before the typical clinical picture is established. This insidious mode of onset may last from seven days to two or three weeks, and is more usual in older children or adolescents. Important symptoms are a vague feeling of "seediness," intermittent limp, fixed pain at the end of a long bone, and on local examination metaphyseal tenderness. This clinical stage corresponds to the stage in which the juxta-epiphyseal focus has not reached the surface, and it is at this stage that diagnosis should often be possible. In other patients, especially in infants and young children, the prodromal phase is fleeting or unrecognisable, and the local and general symptoms are ushered in abruptly.

In the *early stage* the general symptoms are those of an acute infection, mild, severe, or fulminating in type. A rigor may occur at the onset, and the temperature often rises to 103° or 104° F. The fixed pain and the metaphyseal tenderness become more insistent, and now actual bony swelling is recognisable. The latter sign indicates that the infection has reached the subperiosteal space.

Later considerable swelling with œdema and redness of the skin may be present, and where rupture of the periosteum has occurred the fluctuation of an abscess may be detected. A moderate effusion into the neighbouring joint is not uncommon, but the joint movements remain free and painless. In fulminating osteomyelitis the clinical picture of acute septicæmia may overshadow the local signs, and in exceptional cases death may take place in two or three days from the onset. In the average case with severe toxæmia a blood count will usually show a marked leucocytosis, and a culture may demonstrate the presence of the staphylococcus or streptococcus. The symptoms of a systemic infection usually abate when the pus escapes from tension, either spontaneously or after surgical drainage.

Diagnosis.

Since the diagnosis of acute osteomyelitis is rarely made in the early stage, the mortality of the disease is far too high. Mistakes continually arise because the clinical syndrome bears a superficial resemblance to certain acute infective conditions. The more important of these are as follows:—

(*a*) *Acute Rheumatism.*—It is doubtful whether acute *monarticular* rheumatism exists at all as a clinical entity in childhood. Even if the possibility of such a disease be admitted, joint pain, joint tenderness, and muscular spasm present a very different picture from a painful, tender, thickened metaphysis. Such distinctions are appreciable if the affected region be carefully palpated.

(*b*) *Acute Cellulitis.*—In this condition there is early swelling and induration of the soft parts, skin redness, and the complete absence of localised metaphyseal tenderness and bony thickening.

(*c*) *Acute Infective Arthritis.*—In superficial joints, such as the knee or elbow, there is rarely the slightest difficulty in diagnosis. The differentiation between acute suppurative arthritis of the hip and acute osteomyelitis of the neck of the femur, is, however, a more difficult problem. In both conditions early exploration is demanded.

Special difficulties arise in the diagnosis of acute osteomyelitis of the deeper bones—for example, the pelvis—where the local signs may be masked. For this and other reasons pelvic osteomyelitis has an exceptionally high mortality. Suggestive signs of involvement of the pelvis are (*a*) referred pain in the lower limbs; (*b*) pelvic tenderness on rectal examination; (*c*) deep tenderness over the affected bone—e.g., between the iliac crest and the great trochanter, over the ischial tuberosity, or the pubis.

A radiographic examination only rarely affords information of value in the early stages. Occasionally where a juxta-epiphyseal focus has remained latent for some weeks a localised area of destruction may be visible in the radiogram.

In all doubtful cases exploratory puncture of the bone should be performed without delay. A small incision should be made down to the metaphysis, the periosteum incised, and the cortex drilled in several places. If pus appears appropriate drainage should be established. If no pus is found the material extruded from the drill holes should be sent for bacteriological culture, and the wound closed with

a superficial drain. If the diagnosis of osteomyelitis is not confirmed, no harm can result from such a procedure in competent hands. Its more frequent application would mean the saving of many limbs and lives.

The Management of the Case.

The treatment of osteomyelitis is based on two aims: (1) to combat the systemic infection by suitable general and specific therapy; and (2) to establish adequate drainage of the infected area at the earliest moment.

1. *General Measures.*—It is unnecessary to describe the ordinary treatment of an acute infective illness. Of the results obtained from such methods as immunotransfusion, intravenous antiseptic medication—e.g., glauramine or mercurochrome—reports are conflicting. But in desperate cases the potential value of such measures can hardly be ignored.

2. *Operative Measures.*—All drainage operations should be designed to avoid (*a*) further devascularisation of bone; and (*b*) the introduction of infection into non-infected areas. Three types of drainage operation are available.

(*a*) *Subperiosteal and Metaphyseal Drainage.*—At first the infected area consists of the original juxta-epiphyseal focus alone. A little later the subperiosteal collection of pus must be drained in addition. The metaphysis should be opened freely by multiple drill holes, or by the removal of a small trephine disc. All pus and debris should be sponged out lightly, but no curetting of the cancellous tissue should be practised. At this stage there is no justification for the common practice of extending the opening in the bone along the shaft, and exposing the medullary canal for a distance equivalent to the area of the subperiosteal stripping (the "gutter" operation).

(*b*) *Diaphyseal Drainage ("Gutter" Operation).*—At a later stage when the whole of the shaft is infected free drainage of the interior demands an adequate opening into the medullary cavity. The "gutter" operation, which is now unavoidable, is apt to imperil the viability of the remainder of the shaft, and in a subcutaneous bone has the further disadvantage of leaving an avascular adherent scar.

(*c*) *Primary Subperiosteal Resection of the Diaphysis.*—This operation, which has been advocated in the early stages of acute osteomyelitis, has not found favour with the majority of surgeons. The advantages claimed are (*a*) that it gives a most adequate drainage of the subperiosteal space; (*b*) that all infected bone likely to die at a later stage is removed in the beginning; and (*c*) prolonged suppuration and the need for secondary operations are avoided. Such advantages are mainly theoretical. The outstanding objection to subperiosteal resection is the risk of failure of regeneration and consequent interference with the growth of the limb. The procedure is irrational in the metaphyseal stage of the infection, but in a long bone riddled with osteomyelitis it may occasionally be considered as an alternative to the "gutter" operation in the subacute stage.

HARRY PLATT, M.D. Manch., M.S. Lond., F.R.C.S. Eng.,

Senior Hon. Surgeon and Surgeon in Charge, Orthopædic Service, Ancoats Hospital; Clinical Lecturer in Orthopædics, University of Manchester.

THE BIRMINGHAM HOSPITALS.—The scheme for the creation of a new hospital centre to be associated with Birmingham University has advanced a step further by the appointment last week of a secretary to the executive board. The appointment, the salary of which is £1500 a year, has been conferred upon Captain J. E. Stone, chief accountant of St. Thomas's Hospital, secretary of the Central Bureau of Hospital Information, and author of various books on hospital organisation and management. The new hospital, which is to contain 750 beds, is estimated to cost £750,000.—The Birmingham Hospitals Contributory Scheme now has 323,000 workpeople members employed by over 4215 firms in and around Birmingham. This is an increase of 66,000 in the first year. Of the 4215 firms, however, only 1458 have yet joined.

Special Articles.

ASTHMA AND RELATED DISEASES.

DR. A. T. HENDERSON'S REVIEW OF RECENT WORK.*

IN 1902 Charles Richet found that if a dog which had received a non-toxic dose of some poisonous protein was after a certain time given a second injection of the same protein, a violent and often fatal reaction followed. To this phenomenon was given the name of anaphylaxis. It is a curious feature of anaphylactic shock that its symptoms vary in different animals, though collapse to a greater or less degree and fall of body temperature always occur. In the guinea-pig, for example, violent respiratory efforts are made and the smooth muscles of the bronchioles are in extreme contraction. In the rabbit respirations are increased in a different way and death is due to right-sided heart failure, the result of increased resistance in the pulmonary circuit due to constriction of the pulmonary arterioles. In the dog the liver becomes greatly engorged. Dale and his co-workers drew attention to the great similarity between these reactions and those due to poisoning the animals by histamine; this suggested that the sudden breakdown of protein molecules is the factor directly responsible for anaphylactic shock, and it has now been definitely established that the cause is the interaction of antigen and antibodies in the tissue cells of the animal. The injection of antigen in the first place leads to the production of antibodies, which remain for a time in the circulating blood. In this early stage the animal is immune; further injections of antigen do it no harm since the antigen is taken up by the antibodies in the blood stream. But after 15–18 hours the antibodies leave the circulation and enter the tissues. In this later stage the animal is anaphylactic. This is proved by making an animal anaphylactic to horse serum, removing its uterus, washing it free from blood, and treating it with horse serum. A maximal contraction is obtained; but the uterus does not contract if other sera are used instead of horse serum. The reaction is thus specific. From what has been said it follows that though the animal shortly after an injection of antigen is not anaphylactic, its blood as soon as it contains antibodies is potentially anaphylactic; if this blood is injected into a second animal the latter becomes passively anaphylactic (or passively sensitised) 15–18 hours later, when the injected antibody reaches the tissue cells. Further, it has been found that the antibody disappears from the blood as the animal becomes passively anaphylactic. Active immunity is produced by treating an animal with successive doses of antigen at frequent short intervals so that the blood becomes crowded with antibodies. Such an animal will not suffer from anaphylactic shock if a fresh dose of antigen is administered because there are sufficient antibodies in the blood to neutralise the antigen, although it may be proved that the tissues themselves also contain antibodies. This method is used when a patient with hay-fever is treated with small but gradually increasing doses of pollen, so that when he is subjected to a large dose in the hay-fever season no attack follows.

There is another method of arresting anaphylaxis when it is once established. It is to give the animal a non-fatal anaphylactic shock which automatically gets rid of the antibodies from the tissues so that a refractory period of some duration follows before the antibodies again become stored there. This refractory state has been called anti-anaphylaxis.

The response of the guinea-pig to anaphylactic shock resembles so closely an attack of asthma in man as to suggest to anyone that asthma is an anaphylactic

* Being an abstract of the Harben Lectures delivered on Oct. 23rd, 26th, and 30th, 1928, before the Royal Institute of Public Health by Dr. Arthur T. Henderson, Lecturer in Medicine of McGill University, Montreal.

phenomenon. However, one phenomenon of asthma and the other so-called allergic diseases—e.g., hay-fever, paroxysmal rhinorrhœa, angioneurotic œdema, urticaria, and so forth—occurs which differs from that seen in experimental anaphylaxis. A preliminary sensitising injection of antigen is always necessary to produce experimental anaphylaxis, whereas in naturally occurring allergic diseases evidence of such a preliminary sensitisation is usually wanting. This is not always so, because it is possible that the antigen—of which only quite small doses are necessary—may get in through an abraided mucous membrane. For instance, during gastro-intestinal disturbances it is possible that some undigested product such as egg protein may be absorbed from the intestinal tract and so give rise to a permanent state of hypersensitiveness or anaphylaxis to this substance. However, in allergy there are no doubt other factors also present, and heredity or diathesis, nervous factors, and occasionally exposure to light or drugs undoubtedly play a part in addition to the protein irritation and the original trauma through which the protein gained access to the body.

A Clinic for Allergic Diseases.

Shortly after the war an out-patient clinic for allergic diseases was instituted at the Royal Victoria Hospital, Montreal; it is now a recognised part of the out-patient service of the hospital. Thirty or forty different substances are used in this clinic for testing purposes. They include common foodstuffs, animal emanations, or epidermal proteins and pollens. Both the last two groups cause attacks of asthma by being inhaled, and even foodstuffs occasionally produce their effect by inhalation, as in bakers and housewives exposed to the dust of wheat and other grain. Orris root, the rhizome of the iris lily, is a common constituent of scented and tinted face powders because of its agreeable odour and flesh tint and is a potent cause of asthma and paroxysmal rhinorrhœa, due to inhalation. House dust and van Leeuwen's atmospheric mould allergens are other possible causes. In Montreal the tests are carried out by putting on the skin of the forearm a drop of N/10 or N/20 solution of NaOH and dissolving in this a small quantity of the protein applied on the point of a small knife; a superficial cut one-eighth of an inch long is then made through the mixture. A positive result appears in 20–30 minutes, and consists of an urticarial wheal half a centimetre in diameter with a surrounding zone of erythema. Results even less pronounced than this are recorded since they may point to the ætiological factor. The control must, of course, be completely negative.

Out of 160 cases of asthma which do not include patients suffering from hay-fever, vasomotor rhinitis or skin diseases, 25 have been classified as asthmatic bronchitis. Here the chronic bronchitis is the primary disturbance, and has been present for some time. The condition is not really allergic at all. These patients are worse in winter. There is much breathlessness on exercise. They do not enjoy intervals free from bronchitis between the attacks. There is much cough, leading to severe dyspnœa, often described as choking fits, and the sputum is copious. Potassium iodide and stramonium are given with codeine if the cough is distressing; not infrequently a change of climate is necessary. The remaining 135 cases of the series were classified as true asthma, and only 16 per cent. of these were found to be negative on skin testing. The sensitive patients fell into two groups—those mainly sensitive to epidermal substances, and those mainly sensitive to food, but there is frequent overlapping between the groups in individual cases. In the epidermal group feathers were positive in 58 per cent., cat hair in 38 per cent., horse dander in 36 per cent., and dog hair in 26 per cent., and other epidermals such as sheep's wool, rabbit hair, and cattle hair in 18 per cent. Seldom did a patient react to but one of these animal emanations; usually a group relationship to be distinguished from true multiple sensitisation was found to exist. Of other inhaled proteins orris root reacted in 9 per cent. and pollen in 29 per cent.; of the foods, wheat reacted in 40 per cent., oats in 13 per cent., rice in 10 per cent., barley in 9 per cent., corn in 4 per cent., and rye in 3 per cent. In vegetables the following was the order of frequency: tomatoes 15 per cent., potatoes 12 per cent., celery 12 per cent., beans 10 per cent., peas 8 per cent. Of animal and fish foods, lactalbumin was found to lead to reaction in 12 and casein in 3 per cent.; egg-yolk in 4 and egg-white in 3 per cent.; pork in 3; beef and chicken each in 2 per cent.; while of fish proteins haddock, mackerel, and salmon each reacted in 4 per cent.

In examining patients at this clinic the personal history is especially directed to finding out how the different tissues of the body are affected during the attack; whether, for example, the symptoms are: (*a*) ocular—history of swelling, itching, or lacrymation; (*b*) nasal—sneezing, blockage of the nose, itching, profuse watery discharge, the so-called vasomotor rhinitis syndrome; (*c*) pharyngeal—itching of the soft palate, cough; (*d*) bronchial—tightness, wheezing, paroxysmal cough, and clear sputum: (*e*) cutaneous—manifestations such as urticaria, angioneurotic œdema, eczema, erythema, and pruritus; (*f*) gastro-intestinal—idiosyncrasies to certain foods, attacks of vomiting, pain, and diarrhœa, otherwise unexplained; (*g*) urinary; and (*h*) nervous. As has been emphasised frequently the family history in allergic disease is of the greatest importance. In the series discussed this was positive in but 32 per cent. of cases, but the figure is lower than it would have been had it been possible to make more careful inquiry. In the records of other observers roughly 50 per cent. of patients have given a positive family history. Treatment consists in keeping the patient away from those substances which produce the most marked skin reactions. In feather cases kapoc pillows are prescribed, though it must be remembered that kapoc, or some mould that it harbours, occasionally produces asthma. In epidermal cases, where association with animals is essential, vaccination is recommended.

Infective and Reflex Asthma.

In a group of cases classified as infective and reflex asthma usually no bronchitis is present between the attacks; but there is evidence that the asthma is due to infection in other parts of the body. The question remains open whether the asthma is due to sensitisation to the bacterial proteins or is merely due to reflex irritation. That such reflex asthma may be due to marked deviation of the septum, septal ridges or spurs, and marked turbinate hypertrophy is quite easy to understand. Brodie and Dixon proved definitely that the stimulation of the nasal mucous membrane produces a reflex bronchial constriction.

Thirteen cases of asthma were associated with antral infection, and in only two or three were proteins found definitely positive. In all these cases the symptoms occurred chiefly in the winter, in wet weather, and especially at night time on lying down, so that the asthma may have been due to irritation from the trickling of a nasal discharge down the pharynx.

Seven cases were associated with nasal polypi alone, two others with ethmoiditis in addition, and three with chronic ethmoiditis, making a total of 12 cases. Of eight cases in whom polypi were removed, the result was good in five, but in each of these there was a definite protein factor which was also attended to. In three patients negative to proteins, but suffering from bronchitis, there was no appreciable change.

Ten cases had such mechanical defects as marked septal deviation, septal ridges or spurs, and pronounced hypertrophy of turbinates, all tending to obstruct the airway and to favour infection. In all but two protein sensitisation was found. In only one was operation resorted to, and it was successful. Tonsils and adenoids do, in a small number of cases, play an important rôle, though the usual history is that these have been operated upon at least once without relief. However, after other avenues have been explored, operation may be called for.

In some patients asthma starts or is associated with "colds in the head"; here no cause is demonstrable

other than an apparent lack of resistance in the nasal mucous membrane. These patients are always worse in the winter months, or rather in the late autumn and early spring, when the weather is most capricious, and the changes sudden and disturbing. Lastly, a large group of patients, who are true asthmatics, have a superadded infection of the bronchial tubes. Twenty of these exhibited multiple sensitisation to a marked degree. Nearly all had had asthma for a long time. Usually, in this group, vaccines are of material benefit.

MEDICINE AND THE LAW.

Injury from Rat-bite.

Two years ago an infant about a week old was bitten by a rat in the Crayford Maternity and Nursing Home in Kent. An action in respect of the infant's injury was recently brought against the trustees of the home, the committee of management, and the nurse in charge of the baby at the time. On the third day of the trial it was apparently conceded that no action would lie against the trustees, but the rest of the claim was left to the jury, who disagreed and were discharged. The form of the action was a claim by the infant (through its father) for damages for personal injuries due to the defendants' negligence, a claim by the mother for damages for personal injuries to herself caused by shock, and a further claim by the father for special damage incurred by reason of the injuries to his wife and child. The actual facts about the rat-bite were not much disputed. The plaintiffs' case was that, in accordance with the usual practice at the home, the baby was taken from its mother at 9 P.M. and placed in a cot in the basement kitchen of which the floor was some 3 ft. below the ground level. At 1.30 in the morning the nurse on night duty heard a child cry, and, on going to the cot, saw a rat emerge and disappear through the window. The baby's face had been bitten. At 6 A.M. the mother was awakened and told that her baby had met with an accident; to save her feelings she was told the accident was caused by a cat. The mother said that, when she saw the baby's disfigured face, she received such a shock to her nerves that she was ill for a long time; she still suffered from bad dreams about rats. The father said that twice, when motoring, his wife had fainted at the sight of rats running across the road. The issue in the case was whether the rat-bite was a mere accident which, however regrettable, did not create any legal liability, or whether the defendants had been guilty of negligence. The actual allegation of negligence put forward by the plaintiffs was the failure to protect the child's cot in a place which was known to be infested with rats. There was, however, a good deal of evidence to the effect that no rats had ever been seen on the premises at any other time, and that there had never been any complaint of rats being present. The house was an old one, but the drains were in perfect order and there were no signs of rat-holes in the room. The sanitary inspector and rat officer for the local district council said he had examined the house and grounds and found no trace of rats there. The matron at the home explained that one reason why the babies were placed in this kitchen at night was that there was a good fire there and that prematurely born infants required heat and care all night, and it was impossible to have them in the wards with their mothers. She said no patient and no member of the domestic staff had ever mentioned rats to her. No meal was cooked in the kitchen after 12.30 P.M. and no food was kept there. It appeared from the evidence of another witness that, since this accident, the babies at the home are still placed in cots in the kitchen under charge of a nurse at night, but no longer in a basement kitchen. The jury, as already stated, was unable to agree upon a verdict either in favour of plaintiffs or defendants. This means that the plaintiffs are free to start their action all over again.

Parent's Neglect of Child.

Reference was made in these notes a few weeks ago to summary proceedings taken at the instance of the Wolverhampton Education Committee against a father under Section 12 of the Children Act for neglect of his child in refusing to allow an operation for the removal of tonsil obstruction. The father's contention was that he had not refused medical treatment, but he would not allow an operation which might have a fatal result. The magistrates were prepared to convict him, but adjourned the case to see what course he would take. He has now applied for a further adjournment to enable him to call medical evidence—presumably to show that the suggested operation is dangerous and that the child's health is either in no need of treatment or can be improved by some other method than an operation. The medical evidence for the prosecution at the original hearing was unanimous and unchallenged and was such as has hitherto been accepted in similar proceedings under Section 12. It will be interesting to see the result of the adjournment; the court originally adjourned, it was understood, to see whether the father would do voluntarily what the court had power to compel—not to enable him to reopen his defence.

Fumes from Electrical Power Station.

A farmer at Barton-on-Irwell brought an action at Manchester Assizes against the Manchester Corporation, praying for an injunction to restrain the corporation from so working their electricity station as to commit a nuisance by emitting fumes heavily charged with sulphur and sulphur compounds. The fumes, he said, were injurious both to the land which he occupied and to his own comfort and health. The corporation admitted the nuisance, but pleaded that the power station was one of a kind authorised by Parliament to be built at the place in question and that no means which science could suggest could have avoided the nuisance. Mr. Justice Talbot upheld the contention of the corporation and dismissed the plaintiff's action, but on appeal (by a majority of two judges to one) the Court of Appeal has reversed the decision. The case, which is of supreme importance to the undertakers of electrical power stations and to local residents, is likely to go to the House of Lords, though the Court of Appeal in granting the injunction has suspended its order for a year to enable the corporation to adopt measures to mitigate or end the annoyance of which the plaintiff complained. In delivering the majority judgment Lord Justice Scrutton said the corporation did not seem, in building its station which was to be worked on a larger scale than any in England, to have considered what would be the effect of discharging so great a volume of sulphur fumes upon the countryside. They had not since consulted any outside chemical or electrical expert to ascertain whether the nuisance could not be abated or terminated by a different construction of the works or chimneys or by restricting the work of the station. No similar damage was reported in any other case and the corporation had been unable to explain why its works alone had caused such a nuisance. The corporation might be able to prove that it was inevitable that a generating station must damage agricultural land by depositing sulphur thereon, but they had not established that fact, nor had they satisfied the court that all possible means had been taken to discover the cause and the remedy and to adopt reasonable precautions against causing a nuisance.

SUNDERLAND MENTAL HOSPITAL.—It is proposed to enlarge this hospital at a cost of £150,000. The existing buildings are intended to hold 396 patients but there are at present more than 70 beyond that number, and nearly 50 others have had to be sent elsewhere. It is suggested by the Board of Control that the new institution should also serve South Shields and Hartlepool, thus avoiding the necessity for providing separate hospitals for those places.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1927 statistics of eight metropolitan boroughs:—

Name of borough and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Kensington .. (176,700)	15·0	13·8	0·80	1·83	3·1	2·4	66/23	10·9	2·2
Paddington .. (142,700)	15·5	13·6	0·82	1·73	2·6	2·2	79/23	7·2	4·1
Lambeth .. .. (307,700)	16·2	12·6	1·07	1·66	2·5	1·7	55/22	5·8	4·2
Bermondsey .. (121,000)	18·5	12·9	1·45	1·35	3·0	1·6	67/—	5·4	4·0
Battersea .. .. (169,000)	16·6	12·2	1·03	1·49	2·3	2·4	53/28	2·5	2·1
Bethnal Green .. (117,900)	19·9	11·3	1·12	1·29	2·5	2·1	58/20	10·2	1·7
Westminster .. (136,500)	10·0	12·3	0·83	1·73	2·8	2·4	69/34	11·4	5·7
Holborn .. .. (42,209)	12·0	12·5	1·30	1·18	3·1	1·9	38/8	10·0	4·0

The young (1–5) child death-rates per 1000 births were: Kensington 32, Paddington 30, Lambeth 34, Bermondsey 42, Battersea 29, Bethnal Green 37, Westminster 23, Holborn 24. — = No information.

Kensington.

Dr. James Fenton calls particular attention to the statistics with regard to tuberculosis. Since 1919, when the death-rate was 1·31, there has been a steady decline in the tuberculosis mortality to its 1927 rate of 0·80. Soon after the war the council assumed full control of tuberculosis work in the borough. Dr. A. W. K. Picard is the whole-time clinical tuberculosis officer. The borough is divided into seven areas with a woman health officer in charge of each, and it is estimated that the seven women health officers devote three-sixteenths of their time to tuberculosis work. The dispensary staff also includes two indoor nurses, a clerk, and a caretaker. At St. Mary Abbots Hospital there are 48 beds for emergency cases, some of whom are waiting for sanatorium treatment, for advanced cases with unsatisfactory home conditions, and for patients who cannot be adequately nursed at home. Dr. Picard acts as visiting medical officer to the hospital for these patients and arranges for their transfer as required to the L.C.C. Sanatoria. X ray diagnosis and light treatment is available and the consulting services of the staff of St. Mary Abbots. The tuberculosis dispensary is used fairly extensively as a consultation centre. Thus 231 cases were referred to the dispensary by private practitioners during 1927. Every effort is made to secure the examination of all contacts and there is a steady rise year by year in the number of contacts examined. Suspects are also keenly followed up. A dental officer is provided and home nursing is carried out by the Kensington District Nursing Association. There is an active care committee embracing representatives of all statutory and voluntary bodies likely to be interested, and one of its latest ventures is the provision of a handicrafts class for tuberculous patients.

Interesting details are given of the municipal scheme for the control of acute rheumatism. From Oct. 1st, 1927, acute rheumatism in children under 16 (defined as (*a*) rheumatic pains or arthritis if accompanied by a rise of temperature, (*b*) rheumatic chorea, and (*c*) rheumatic carditis) was made a notifiable disease for a period of three years. The rheumatism supervisory centre is established at the Princess Louise Hospital under the charge of Dr. R. C. Lightwood (assistant physician to the hospital), who becomes consulting physician to the borough of Kensington for acute rheumatism. Beds are provided for acute rheumatism both at St. Mary Abbots and the Princess Louise Hospital, under the charge of Dr. Lightwood. The council make an annual grant towards the provision of beds in suitable recovery homes. After notification the staff of the medical officer of health make full inquiries as to the conditions in the home and persuade the parents to take the child to the supervisory centre. A committee, including representatives of all the statutory and voluntary bodies likely to be interested, supervises the scheme and helps in the searching out of cases needing attention. "Long stay" cases for convalescent treatment may be dealt with by the M.A.B. hospitals or arranged for through voluntary channels. During the first three months of the operation of the scheme 48 cases were notified, the homes of which were investigated by the health visitors. The centre was opened in temporary premises on Oct. 29th and transferred to the new Princess Louise Hospital on Dec. 3rd. Up to the end of the year nine sessions had been held at which 26 new patients presented themselves. On May 21st, 1928, the Princess Louise Kensington Hospital for Children was opened by the King and Queen, and then consisted of an out-patient department and two ward units providing 36 beds, with accommodation for the staff.

Antenatal work makes good progress in Kensington. There are eight municipal clinics and in addition a special antenatal clinic at Queen Charlotte's Hospital Nurses' Home. It is considered that about 60 per cent. of the expectant working-class women in the borough now receive antenatal advice. The maternal mortality for 1927 was encouraging.

Paddington.

The report of Dr. G. E. Oates shows that the public health services have developed on somewhat different lines to those of its neighbour Kensington. Thus, there are two tuberculosis dispensaries, both of which are voluntary agencies subsidised by the council. The dispensary at St. Mary's Hospital serves the eastern portion and the Paddington Tuberculosis Dispensary (20, Talbot-road) serves the western portion of the borough. In addition to the subsidies the council pays for dental treatment by arrangement with the British Dental Hospital and for the cost of artificial pneumothorax at 10*s.* 6*d.* per refill. During 1927 four patients received the latter treatment at a cost of £24 13*s.* 6*d.* There is ample hospital accommodation for both mother and baby when needed for ophthalmia neonatorum. Out of 15 cases of ophthalmia notified in 1927, eight were treated as in-patients. Cases of puerperal fever are removed to one or other of the M.A.B. hospitals. Seven cases were notified in 1927 and all were nursed in hospital. In addition, 34 cases of puerperal pyrexia were notified, 26 of which received in-patient treatment. Mr. A. W. Bourne, F.R.C.S., has been appointed consultant for puerperal pyrexia but no request was made for his assistance during the year.

The maternity and child welfare centres are provided by the Paddington School for Mothers and carry out some antenatal work. During 1927 283 women from Paddington were admitted for confinement to Queen Charlotte's Hospital and most of these attended the antenatal department of the hospital.

Paddington was the first area in Great Britain to make acute rheumatism a notifiable disease (from March 1st, 1927). The regulations "enjoin the medical officer of health to make such inquiries and take such steps as are necessary or desirable for investigating the source of disease, for removing conditions harmful to the patient, and arranging for the treatment of the patient." "All these inquiries and any necessary

action," says Dr. Oates, "have been delegated to the Rheumatism Supervisory Centre which was opened at Paddington Green Children's Hospital on Oct. 9th, 1926." "The Centre is under the personal supervision of one of the honorary physicians to the hospital and there is also a salaried medical officer, who devotes her whole time to visiting cases of the disease and making such inquiries as may elucidate the causes thereof." There were 38 notifications received during the year and 27 of these children attended the supervisory centre.

Commenting on the high infant mortality, Dr. Oates suggests that Paddington is too much built over and too overcrowded, and that many families who are not badly off have to share with other families dwelling-houses which were only built for one family. There is a lack of garden and yard space. There are no slums in the ordinary sense and the number of houses, which require closing and demolition, is small. It is difficult to find any area in the borough suitable for housing development, and no municipal houses were erected during the year. The 1924 arrangement with the L.C.C., by which Paddington is allocated 15 houses per 1000 of those built by the County Council, still holds, but the estates mainly available, Becontree and Downham, are too far away. The waiting list of tenants is well over 1000.

Lambeth.

Dr. Joseph Priestley presents his farewell report after 32 years' service. He did not live long to enjoy the leisure of retirement, as will be seen from the obituary notice on another page. In June, 1895, Dr. Priestley was appointed medical officer of health to the old parish of St. Mary's, Lambeth, which became the borough of Lambeth in 1901. The report takes the opportunity of reviewing the many changes which have taken place in the public health service during that period and contrasts the death-rates of 1895, 1901, and of recent years. Among institutions he specially mentions the Council's new maternity home at Knight's Hill, which had a fine record for 1927 and will shortly need extension to cope with the requirements of the borough. A new assessment committee has been appointed to deal with the fees to be paid by the mothers. The report gives Dr. Priestley's opinion alone as to further needs and does not commit his successor (Dr. A. G. G. Thompson) who took over the duties on Nov. 1st, 1927. Two of these needs given by Dr. Priestley are the appointment of a woman medical officer for the detailed work of maternity and child welfare and the provision of an up-to-date central tuberculosis dispensary. At the present time there is an entirely inadequate central dispensary in Brixton with a branch dispensary at St. Thomas's Hospital, and the proposal has been put forward that the needs of the borough might be met by the establishment of a second dispensary at King's College Hospital. This would, in Dr. Priestley's opinion, be a great mistake and amount to a delegation of the whole of the council's tuberculosis work to outside organisations. An important advance made during the year was the new appointment of an experienced bacteriologist, Miss F. M. Speakman, to carry out the work in the municipal laboratory.

Bermondsey.

Dr. R. King Brown, in his valedictory report after 28 years' service, gives an interesting account of the development of the local public health services. Among post-war schemes he mentions the establishment in 1920 of a municipal dental surgery, under the direction of a (whole-time) surgeon, Mr. Grantley Smith. During 1927 a branch was opened in charge of a part-time dental surgeon. The new cases treated during 1927 exceeded 3000 and included pre-school children, children of school age, expectant and nursing mothers, and tuberculosis cases. Since July, 1924, as the result of a lecture at Guy's Hospital by Dr. Rollier, Bermondsey Council has reserved six beds at Leysin for the "long-stay" treatment of advanced non-pulmonary tuberculosis. During that time 14 patients have been sent and Dr. D. M. Connan, the tuberculosis officer (who has now succeeded Dr. King Brown), reports favourably as to the permanency of the cures effected at Leysin. Dr. Connan's report on the work of the specially built solarium, which is equipped for giving outdoor light treatment, shows that 456 new patients were treated. The rickets and malnutrition children under 5 did well when they attended regularly. The health of some ten antenatal cases was greatly improved. The value of light treatment for surgical tuberculosis, if given cautiously over a considerable period, was indubitable, but no definite pronouncement was possible as to pulmonary tuberculosis.

Details are given of the census taken during the year to obtain reliable data as to overcrowding. There are in the borough 29,284 families. Of these, 19,887 lived under conditions which give one person or less to a room; 6634 had two persons to a room; and 2763 families lived under conditions which give three persons or more to a room. One area of four acres has been cleared by the borough council, one of six acres is being cleared by the County Council, and the clearance of another area is in contemplation. Much of the work of the Bermondsey residents is of a casual nature and connected with the waterside. Such workers must be housed near their work. Dr. Brown urges that, in letting municipal houses, more care should be taken to see that the accommodation is exactly suited to the needs of the family, so as to avoid waste of rooms on the one hand and the evils of overcrowding and subletting on the other.

Battersea.

Dr. G. Quin Lennane reports that the development of antenatal work during the past four or five years has no doubt contributed to the satisfactory improvement in the maternal and infant mortalities and that the increased attendances at the central clinic at the borough maternity hospital will shortly render it necessary to increase the accommodation by the erection of an out-patient block. Miss Alice Bloomfield, F.R.C.S., who conducts four antenatal sessions weekly, shows that 1140 patients attended, being an increase of 68 over the previous year. The maternity hospital has 30 beds and admitted 602 cases. The appointment of a resident medical officer, who has also assisted at the antenatal clinics, has been a great advantage in securing continuity of treatment. At one of the clinics 674 women were tested by the Wassermann reaction, of whom 12 reacted. Of the babies born to the latter, six had a negative Wassermann, four appeared to be healthy but did not come up for testing, and two had a positive Wassermann, probably owing to the fact that they came under treatment too late. Half of them came after the seventh month. Dr. Lennane reports that "serious and even dangerous overcrowding" exists in the lower wards of the borough, and hopes that steps will be taken to speed up the provision of dwellings at rentals within the reach of those whose need is greatest. In October a clinic was established at one of the centres for the immunisation of children against diphtheria, under the charge of Dr. Mabel Brodie, and 52 children were being immunised at the close of the year.

Bethnal Green.

Dr. F. Leonard Keith, who took over the duties on May 2nd, in his first annual report picks out housing as the most serious single factor adverse to the public health. In 1919 13 unhealthy areas were scheduled by his predecessor, Dr. Oates. Only two of these areas have been attacked as yet, one by the borough and the other by the County Council. The borough council has fully exercised its powers considering its limitations. Procedure with respect to individual houses is precluded by common sense and humanity in the absence of alternative accommodation, and the housing problem is complicated by the prevalence of unemployment and low wages. Dr.

Keith thinks it is impossible to dissociate the marked improvement in maternity and infant statistics from the progressive policy of the Council. The chief centre is a well-equipped building with provision for light treatment, dental treatment, and massage. There is a staff of ten health visitors and nine part-time women doctors. Dr. Ruth C. Townsend reports on the maternity clinic at which a special session for postnatal cases has just been provided. Dr. Helen M. M. Mackay conducts a special consultation clinic, of which artificial light treatment is a feature, and which receives its cases from all the other clinics. The joint tuberculosis dispensary for Hackney and Bethnal Green is at the City of London Hospital for Diseases of the Heart and Lungs. The tuberculosis officer, Dr. H. Tylford Howell, is not greatly impressed with the benefits of artificial sunlight. He would also like to see the L.C.C. provide more beds for advanced cases in lieu of the scheme for the removal of the children of such patients from their homes. It is difficult to get the consent of the parents to this "boarding out."

Westminster.

Dr. Andrew J. Shinnie describes housing as second to none in importance among the public health issues, and expresses the opinion that the proposed schemes of his council will go a very long way to solving the problems of overcrowding, illegally occupied separate basement dwellings, and other insanitary conditions associated with housing shortage. The block of buildings named "Admiral House" was expected to be occupied in the middle of the present year and to house 234 persons in 11 two-roomed, 25 three-roomed, and 5 four-roomed dwellings. Westminster have also arranged to accept 50 houses on the L.C.C. estate at Hammersmith. The city council nominated 70 tenants but 15 were refused by the L.C.C. on financial grounds and 15 withdrew their applications. At the end of the year 40 Westminster tenants were housed on this estate. House-to-house inspection is being pursued with great activity. Dr. Shinnie has a good deal to say in criticism of the amateur survey which was made of Victoria ward in May to which great publicity was given and which has entailed much inspection without corresponding benefit. The kata-thermometer has been used for testing the ventilation of workshops, and the results seem to indicate that further investigation will be needed before the principles suggested by Prof. Hill can be brought into practical application. Immunisation was begun towards the end of 1926, and at the end of 1927 270 children had been treated without any unpleasant reactions. It was noteworthy that 30 of the children brought up for voluntary immunisation against diphtheria had evaded compulsory vaccination.

Holborn.

Dr. C. W. Hutt considers that "antidiphtheria immunisation is worthy of an extensive trial." Since it was begun in Holborn 720 persons have been immunised, all except 12 under the age of 15. Retesting, although unpopular with parents, is found to be necessary as 68 out of 555 immunised were found to be still Schick-positive, and six confirmed cases of diphtheria occurred among children, who had received the routine three injections but had not been retested. The first of the six, aged 4 years 4 months, when first Schick-tested had a severe attack 13 months after the last injections; the second, aged 6 years 5 months, a very mild attack 13 months after; the third, aged 3 years 3 months, a mild attack 18 months after; the fourth, aged 6 years 8 months, a severe attack 22 days after; the fifth, aged 7 years, a mild attack two days after; and the sixth, aged 1 year 8 months, a mild attack four years after. The fourth and fifth cases, of course, occurred before the lapse of the period required to secure immunisation. The reaction after the injections was in practically every case negligible. In order to facilitate antenatal supervision the borough council has, with the approval of the Ministry, adopted from Jan. 1st, 1928, voluntary notification of pregnancy by medical practitioners and midwives for which fees of 2*s*. 6*d*. in private practice and 1*s*. in public practice will be paid. The notifications will only be made with the approval of the expectant mothers.

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Percentage of aver. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.*
Leicestershire	36,812	88·2	10,258	6,948	14·4
County of Warwick	—†	—†	11,508	9,028	13·7
Northumberland	—†	—†	15,546	8,294	23·81
Colchester ..	5,822	87·9	1,669	2,955	21·0
Glasgow ..	190,613‡	87·9§	46,611	44,854	49·7

* Excluding dental defects and uncleanliness. —† Not stated
‡ All types of school. § Ordinary school only.

Leicestershire.

LEICESTERSHIRE is now among the progressive authorities establishing orthopædic schemes. Dr. J. S. Fairer reports that a very substantial advance is being made by the provision of beds in Mansfield Orthopædic Hospital. For children living in the northern area of the county facilities are available at St. Gerards' Hospital, Coleshill; patients are selected at the clinics of the Loughborough Cripples' Guild by Mr. S. A. Malkin, who is surgeon both to the hospital and to the Guild. Children from the southern part of the county are referred to the orthopædic clinic at the Leicester Royal Infirmary, where they are selected for in-patient treatment by Mr. R. S. Lawson. For areas inaccessible to these larger centres it is proposed to establish clinics under the school authority for the provision of massage and electrical treatment; such a clinic is now being started at Coalville. It is recognised that local clinics will make for economy since by their use good results can be obtained with a shorter stay in hospital. The necessity of these facilities was made particularly obvious by the epidemic of anterior poliomyelitis of 1926, the effects of which were brought out in a special survey made in 1927 of the physically defective school-children in the county. Three beds are reserved for infants under the care of the maternity and child welfare committee in the Mansfield Hospital. The coördination of the infant welfare work with school and other branches of public health is made easy by the fact that the county medical officer is ultimately responsible for them all and by the fact that the senior medical officer for welfare work is also the clinical tuberculosis officer, while the other two medical officers are also school doctors. The transfer of relevant information between various departments is thus easy. Dr. Mary Weston has conducted an inquiry on the origin of infantile defects in school entrants and especially on the influence of measles and whooping-cough; the outcome was that the percentage of defectives (36 per cent.) was not materially affected by either or both these diseases. An analysis of the figures for special defects did not substantially modify these results, which are rather unexpected. The figures on which they are based are admittedly small (1000 children), but the inquiry was evidently conducted on sound lines. It may be that wider general knowledge and more efficient treatment during the course of these illnesses has resulted in a diminution of serious sequelæ.

County of Warwick.

The county of Warwick includes some large urban districts, so that the medical staff has to deal with

secondary schools and the continuation school at Rugby. The area is likely to undergo further changes, for by the Act that came into force on April 1st, 2550 school-children were transferred from the authority of the county to that of the extended city of Coventry. The change will mean some adjustment of the nursing staff and two of the clinics for minor ailments will no longer be required. The curtailment of the area may be of advantage, since the present strength of the health visiting staff is only barely sufficient for the ordinary routine work. As a result of an endeavour to economise on the expenditure on operations for tonsils and adenoids, an appeal was made to the medical inspectors to lower their standards and so reduce the number of cases referred for treatment. Accordingly, only 3·9 per cent. of all children have been referred for operation as compared with 6·7 per cent. last year. Such a marked decrease seems scarcely sound; it is not justifiable to allow children to suffer from all the physical and mental handicaps and the economic depreciation caused by obstructions of the nasal passages for a small saving in expenditure. But in many parts of the country there seems to be a tendency to be more conservative in recommending operative treatment, and the decrease may be due to causes other than the desire to economise. Considerable progress has been made in the development of the orthopædic scheme and most of the county is now covered, but it is held up at Stratford-on-Avon and in the Tamworth district until sufficient funds are forthcoming from the county council. Dr. Hamilton Wood includes in his report a valuable account written by Mr. R. P. Marsh of his work of organising physical education in all its branches. This account appropriately follows the section on orthopædics, for in this county there is a real unity of all the work designed to promote the right development of the child, from orthopædic surgery, remedial and physical exercises, to activities like swimming and organised games.

Northumberland.

Arrangements for the care of children in the counties with scattered populations are often less advanced than those in urban districts. Northumberland has still no orthopædic scheme, efforts to promote one having been frustrated by inability to secure hospital accommodation. One step, however, has been taken in the appointment of an orthopædic surgeon, Mr. William Mackenzie, and it is hoped that before long some workable plan may be presented. The scheme for the operative treatment of tonsils and adenoids is likely to be considerably extended in the near future. Dr. W. Whitley notes that the incidence of tonsils and adenoids appears to have fallen by 50 per cent. since 1920, and he thinks the fall may be partly due to change of standard; if that be so it is the more important that all those who are recommended for treatment should obtain it. The proposal to appoint a second dentist was not carried out for lack of suitable premises. It is now suggested that a dental van would be of value and would carry treatment into otherwise inaccessible places. Reports from other counties similarly placed, such as Cumberland where this device has been tried, show that it has proved very useful. The dental surgeon, Miss C. M. Anderson, deplores the prevalence of dental caries in infants; there is a general lack of oral hygiene and the children are neither trained nor interested in care of the mouth and teeth. That ignorance rather than apathy is the obstacle is shown by the fact that children who have been previously treated and inspected usually maintain better oral hygiene than the rest. Miss M. Wardle, organiser of physical training, writes of the importance of good posture and its important bearing on good health and hygiene. There are no special schools belonging to the local authority in Northumberland, and many defective children of all kinds still attend elementary schools or receive no education of any kind.

Colchester.

The report of Dr. W. F. Corfield shows that steady progress is being made. The actual number of routine inspections has fallen by 200; this is partly due to the decrease in the number of children reaching the age for medical inspection (which is more or less general over the country), and partly to an accidental local factor, the reduction in the number of children in two schools owing to an outbreak of measles and also to the illness of a school nurse. Of the orthopædic clinic Dr. Corfield says that the good work done has been far greater than he expected, and that every year a larger number of children who would have grown up with a deformity such as a club-foot are now discovered in time, and if they are not completely cured the deformity is so modified and moulded that a limb which would have been unsightly and almost useless is made strong and useful. The orthopædic surgeon, Mr. Whitchurch Howell, sees also infants referred from the infant welfare department, and it is hoped that next year he will have the assistance of a nurse trained to give remedial exercises. A testimonial to the work done in Colchester is the large and increasing percentage of parents attending medical inspections; in 1925 it was 77, in 1926 79, and this year 80 per cent., while for the entrants it was 93 per cent. These figures show that the interest and sympathy of the parents are being won. There is need for a full-time dental surgeon and a nurse to help him. The number of children actually treated is still scarcely more than a third of those who were found to need treatment, but a good sign is the fact that the fillings were 105 more than last year. In one small matter we cannot agree with Dr. Corfield. He suggests the possibility that the 50 per cent. fall in cases of defective vision may be due to improved school hygiene; but it is only myopia that is likely to be affected by school conditions, and the myopic children are less than a quarter of the total number suffering from defective vision. However this may be, Colchester may be justly proud of possessing a special class for sight-saving. There is accommodation for 22 children in special schools, and if there was an open-air school the return of exceptional children would be highly creditable.

Glasgow.

The report of Dr. E. T. Roberts is printed as an appendix to that of the Director of Education, and although many interesting facts are included they are set forth chiefly in the form of statistics. The effect of a large immigrant population is seen in the frequent mention of special and industrial schools for Roman Catholics, and it is probably the poor standard of living aggravated by the recent industrial conditions which causes the figures for heights and weights to be considerably below the standard of the anthropometric committee. The educable abnormal children can be dealt with under two great heads: (1) those fit for the special day schools for physically and mentally defectives; (2) those who require change of air with or without special medical attention.

(1) The special day schools and the "annexes" which serve a similar purpose are often arranged for the reception of both mentally and physically defective children—a system not very common in England. The total number of children on attendance in these special schools was 4984. The authority also gives attention to those mentally defective children who have reached 16 years or have been given exemption from school before reaching that age. Three women officers devote their time to keeping in touch with them and, if possible, finding them employment. The accommodation in institutions for those found incapable of receiving benefit from instruction given in special schools is, unfortunately, far too small. The matter is receiving the attention of the authorities concerned.

(2) There is increased accommodation in holiday schools; a new one for girls was set up last year

in the building which was formerly the Hillsfoot Training School of the Delinquency Board, and next year a similar school for boys will be provided. The children in this group are in practice divided into: (*a*) those requiring an extended period of residence outside the city with special medical attention; and (*b*) those who require a shorter period under good conditions but without special medical attention. There is now accommodation for both types, the Hillsfoot School receiving 70 Protestant girls of type (*b*).

The balance of treatment and inspection has been disturbed by the industrial dispute which, by affecting the financial position of many families, caused an increased demand for treatment and consequently a restriction of the time available for medical inspection, so that the number of routine inspections was lower than last year. The number of cases of ear diseases shows a rise of over 20 per cent. The attendances for treatment in general show small increases, but that for ionisation is much higher, ndicating the value which is now placed on this treatment. Eye diseases show an increase of 37 per cent., especially in conjunctivitis due to decided epidemics in May and the early summer and in autumn. Affections of the skin in general account for nearly 14,000 cases as against 12,300 last year; impetigo accounts for 1000 of the increase, while scabies has had an increased prevalence for the first time since 1920. Dr. Roberts says that in previous years there has been a tendency for the actual diseases of the skin to decrease and for injuries, abscesses, and burns to increase. This year the accident type of case is six times as common as it was in 1920, but the usual fall in diseases of the skin has been prevented by the industrial conditions. Ringworm, however, has yielded to the influence of the special skin school and X ray treatment to such an extent that the special school has been closed. Necessitous cases of illness, for whom emulsion and drugs were given free, have been nearly 30 per cent. more numerous than last year. Many more teeth were treated this year. In this matter the greater enlightenment of the parents might be held responsible, but it is noteworthy that increase is in extractions and not in fillings.

MENTAL HOSPITAL REPORTS.

THE *Derby Borough Mental Hospital* had 479 patients on its registers at the end of the year, meaning that there were only 17 vacant beds. The recovery-rate was 22·7 per cent. and the death-rate 6·4 per cent. The cause of death, verified by autopsy in 29 instances, was heart disease in nine patients—the commonest cause. There was no zymotic disease or influenza and only seven patients were under treatment for tuberculosis. The medical superintendent ascribes these satisfactory results to the improved diet and the high standard of nursing. Parole was granted to 40 patients and weekly shopping parties of 30 women go out beyond the estate. A cinema is to be installed and a convalescent hospital and laboratory are needed; at present a small room is set aside for routine pathological investigations. Six nurses obtained their certificate during the year, one with distinction. The committee has also 44 defectives under certificate in various institutions throughout the country. A house is being adapted to form a home for 13 low-grade able-bodied defective girls.

The *Wilts County Mental Hospital* housed 1146 patients at the end of last year, 30 fewer than at the beginning. The recovery-rate was 26·9 per cent. and all but two of those discharged had a probationary period on trial, 18 with money allowances. The death-rate was 9·6 per cent., a large figure almost wholly accounted for by deaths of aged people; the next commonest causes were tuberculosis, heart disease, and general paralysis. The cause was verified by autopsy in 75·6 per cent. of cases. There was no epidemic, but there were 16 cases of dysentery, six fatal, and two cases of erysipelas. The visiting commissioners urge the provision of a laboratory and ultra-violet ray apparatus. A sister tutor has been appointed and ten nurses obtained their certificate during the year. The two out-patient clinics at Swindon and Trowbridge have already justified their existence; 35 patients have attended the former and 31 the latter.

The *Roxburgh, Berwick, and Selkirk District Asylum* had 363 patients on May 15th, 1928. The recovery-rate for the year was 23·9 per cent., and this low figure and the high death-rate of 13·4 per cent. is ascribed to the large number of aged patients admitted. No less than 42 per cent. of the admissions for the last two years have been senile cases, many almost moribund. Autopsies were held on 25 cases. There was no serious epidemic. Two visiting dental surgeons have attended fortnightly. A cinema has been installed. There are also 57 defectives under the care of the Board. Eleven nurses obtained their certificate during the year, and the number of certificated nurses would be larger but that many leave to obtain a general nursing training—a step which cannot be deplored, although it deprives the institution of valuable service.

MINISTRY OF HEALTH.

ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER.

(*Concluded from p. 1165.*)

TUBERCULOSIS.

THE number of fresh cases of tuberculosis coming to the knowledge of the health authorities during 1927, whether by formal notification under the Tuberculosis Regulations or from other sources, was 77,890. Notification is, on the whole, more effectively carried out year by year, but the reports of medical officers of health show that many deaths from tuberculosis have occurred amongst cases not previously notified. The number of deaths registered from all forms of tuberculosis in England and Wales for 1927 was 38,173. In England, on April 1st, 1928, tuberculosis work was being carried out in 440 dispensaries, and, in addition, 95 other premises were approved for special forms of treatment, including orthopædic out-patient care of tuberculous cripples after return from residential treatment. There were 378 approved tuberculosis officers. The number of beds allocated to tuberculosis in institutions, excluding 108 institutions concerning which no information is available, is 22,618. The number of patients occupying these beds varies; a certain proportion is always unoccupied particularly in the winter months. On April 1st, 1928, there were 19,710 patients, including 6128 children in the 22,618 beds.

In surveying the question as to how the tuberculosis scheme is working throughout the country, Sir George Newman passes under review problems of notification, diagnosis, bacteriological examinations of sputum, the use of X rays, home visitation, and length of sanatorium treatment. The figures given relating to residential treatment should be studied closely by those anxious to use the available bed accommodation to its utmost. The Ministry suggested in Circular 280 the advisability of differentiating patients into the early, intermediate, and advanced stages. They proposed that early cases or others in which there is hope of definite arrest of disease should be retained for long periods, also advanced cases admitted to institutions because they were dangerously infective; but that the needs of the intermediate class would usually be met by short periods of treatment, repeated when necessary. Yet in some areas a considerable proportion of the intermediate cases were retained in sanatoria for prolonged periods—over six months. The intermittent character of the disease makes it fairly certain that many patients in this class will relapse in any case. It

appears to be a sounder policy to give an intermediate case the shortest period of treatment which will restore his working capacity, and to readmit him for further short periods when relapses occur or appear to be imminent. On the other hand, the figures in column 36 are disappointing in the other direction, as indicating that many cases, presumably of the class in which complete arrest is possible, have been retained in residential institutions for *quite inadequate periods*. For the country as a whole only 22·5 per cent. of these cases stayed over six months. Local authorities and the general public should clearly understand that tuberculosis cannot be arrested by the sanatorium method unless that method is given a proper chance. Unfortunately, the period of stay is not the only factor which has mitigated against recovery. Sir George Newman concludes that—

(1) The *principle* of the sanatorium method is sound, and there is at present no alternative principle available.

(2) The sanatorium *system*, that is to say, the method of organisation by which the principle is practised, may be, and often is, faulty. It is always in need of vigilant supervision if it is to deliver the results desired.

(3) The critical issue must always be the *effective intensive treatment of each patient*, on his merits or demerits of physiology, pathology, and psychology. There can be no adoption of a "rule of thumb" practice.

He adds it is difficult to escape the conclusion that the superintendent is not always giving sufficient attention to the method and organisation of his sanatorium or sufficient intensive study to each individual case in his charge.

The Results of Sanatorium Treatment.

Unless a satisfactory proportion of the pulmonary cases classed as early can be classified as "quiescent" on discharge from residential treatment, the questions may well be asked :—

(*a*) Is such failure due to the type of the institution and the character of the treatment given thereat?

(*b*) Is it due to the fact that the duration of the patient's stay has been too short?

(*c*) In the case of the Class T.B. *minus*, is it due to the fact that intermediate and advanced cases have been wrongly included (through failure to have the sputum examined) in a group which should consist of early cases?

On the answer to these questions and the action taken thereon will depend very largely the future success of any sanatorium scheme, and the retention of public confidence in the value of sanatorium treatment. A few weeks ago a public statement was made by a representative medical man in regard to sanatorium treatment in England. He is reported to have said :—

"However useful sanatoria may be from a preventive point of view or as a means of segregating tubercular people, they are from a curative point of view I am afraid of little, if any, use. . . . In fact, the sanatorium method can only show 14 per cent. of cures, which is very low, whereas other methods can show 70 per cent. and 80 per cent. of cures."

This declaration was founded, according to information received, on the results obtained at one particular sanatorium in this country and upon an alternative method of treatment. If the statement be accurate, it is obvious that the State should direct its available resources not towards sanatorium treatment but towards some alternative method.

It is far from an easy matter to assess precisely the value of sanatorium treatment as indicated by the percentage of "cures" obtained. Certain other methods of estimating its value, however, are available. Substantial data exist for our general guidance, and these may be illustrated in three groups of facts.

In the first place, we may take into consideration the broad fact that from 1913 to 1926 there were in England and Wales 1,191,940 persons notified as suffering from tuberculosis (including those certified as having died between 1923 and 1926 inclusive). During that same period, 1913–1926, the total number of deaths certified as due to this disease was 656,049. This leaves 535,891 tuberculosis patients as not having died from tuberculosis within that period, which gives us a survival rate of approximately 50 per cent., even though many of the known cases which died never received treatment under any public scheme.

Obviously this does no more than present a general picture of "recoverability," with or without sanatorium treatment or any treatment. From 1847 to 1926 the mortality from tuberculosis of the respiratory system in this country declined from 3189 per million to 730 per million, an astounding fall, and, moreover, recovery from small degrees of tuberculous infection is a matter of daily experience. In fact, under favourable conditions and in its early stages tuberculosis shows probably a higher degree of recoverability than any other of the great constitutional diseases. In the second place, while it is true that some sanatoria, indifferently conducted or unfavourably placed as regards the severity of the cases admitted, yield a small proportion of recoveries—i.e., cases classified on discharge as "quiescent"—it is equally true that a properly organised sanatorium system shows good results. For example, in Lancashire in 1926 over 80 per cent. of early cases were quiescent or improved on discharge.

After-care.

The importance of "after-care" in enabling patients to obtain the full advantage of treatment in residential institutions and in helping them subsequently to obtain suitable conditions of living and occupation is emphasised. Unfortunately there are many areas where no arrangements for care work have yet been made. One of the greatest difficulties in connexion with this work is that in some areas care committee workers do not realise how much efficient work can be done by advice and personal assistance in individual cases at trivial cost, and think that no useful work can be carried out unless ample funds are at their disposal. It is not suggested that many care committees do not require funds to enable them to carry out their work to the greatest advantage; but it is certain that much useful work can be carried out in the absence of such funds. The patient may need advice with respect to pensions, sickness benefit, assistance in obtaining a more suitable house or employment, the loan of a bed or help in providing for his family during treatment in a sanatorium. Frequently organisations exist which can afford the needful help, and the function of the care committee in these cases is to bring the patient into touch with the appropriate organisation.

Workshops and other schemes, such as the village settlements at Papworth and Preston Hall for the employment of tuberculous workers, are praised by Sir George Newman.

Methods of Treatment.

Of *artificial pneumothorax* in suitable cases he speaks highly, but is less confident as to the benefit obtained from other operative procedures, such as *phrenic evulsion* and *thoracoplasty*. Such methods are anyhow reserved for particularly selected hospital cases, and should be undertaken only by competent and experienced surgeons.

As to the treatment by gold salts, the recent clinical evidence concerning *sanocrysin* is reviewed at some length. It seems clear, he says, that sanocrysin is a form of treatment that is of limited application, and can only be given to carefully selected cases under constant medical supervision, and with due appreciation of its risks and contra-indications. Further experimental work on the effects of sanocrysin is being done by Prof. S. L. Cummins at Cardiff, under the auspices of the Medical Research Council.

From time to time the Ministry and the Medical Research Council receive representations from outside which urge the need for new investigations of the clinical value of *tuberculin* in the treatment of human tuberculosis. This question has recently been con-

sidered by the tuberculin committee of the Council, who have advised that no useful purpose would be served by meeting these requests.

A useful recapitulation of our present knowledge of immunisation by Prof. Calmette's method of prophylactic vaccination of the new-born is included.

Prof. Major Greenwood, F.R.S., on behalf of the Medical Research Council Committee, has examined Dr. Biraud's report on 1537 infants brought up in a tuberculous environment, who had been vaccinated during the years 1924 to 1926. Of these 1050 had been in contact with tuberculous people and 487 in contact with tuberculous mothers. The general mortality from all causes in the two groups during the first year of life was 7·6 per cent. and 6·6 per cent., while the mortality from tuberculosis during the first year of life was 1·55 per cent. and 2·46 per cent. According to Calmette, a comparison of the mortality of vaccinated and unvaccinated children in contact with tuberculous mothers brought out striking results; the rate for the former was 6·6 per cent., and that for the latter 24 per cent. Prof. Greenwood considers that the mortality in the first year of life of the vaccinated children is no worse than that of ordinary children. Hence, if it could be shown that the rate of mortality of children of the class living in tuberculous homes is very much worse than the average, a prima facie case in favour of the process would have been made out.

It is clear that much more detailed information is necessary, especially of the mortality rates of vaccinated children brought up in contact with tuberculous mothers, before Calmette's claims can be completely accepted.

The provision of X ray facilities for purposes of diagnosis and to check the progress of a pneumothorax is commended. With the present facilities for the artificial light treatment of lupus there should be no need, in Sir George Newman's view, for utilising X rays in the treatment of this disease; the last-named practice involves serious risk of the appearance of carcinoma in the treated area.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 8TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 155 (last week 189); scarlet fever, 2864; diphtheria, 1360; enteric fever, 39; pneumonia, 1133; puerperal fever, 46; puerperal pyrexia, 117; cerebro-spinal fever, 12; acute poliomyelitis, 9; encephalitis lethargica, 19; dysentery, 18; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board[1] on Dec. 11th–12th was as follows:—Small-pox, under treatment 14; scarlet fever, 2488; diphtheria, 2129; enteric fever, 16; measles, 53; whooping-cough, 390; puerperal fever, 18 (plus 7 babies); encephalitis lethargica, 74; poliomyelitis, 4; "other diseases," 14. At St. Margaret's Hospital there were 6 babies (plus 2 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 18 (0) from measles, 8 (2) from scarlet fever, 30 (6) from whooping-cough, 30 (8) from diphtheria, 51 (7) from diarrhœa and enteritis under two years, and 60 (10) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Bristol and Manchester. Liverpool reported 3 deaths from measles, and Manchester 3 from whooping-cough. The largest number of fatal cases of diarrhœa were reported from Birmingham 8, Manchester 6, Liverpool and Salford 4 each (Glasgow 5, Belfast 8). No town reported more than 2 deaths from influenza except Birmingham 5, Leicester and Rochdale 3 each (Glasgow 7).

The number of stillbirths registered during the week in the great towns was 287 (corresponding to a rate of 44 per thousand births), including 51 in London.

[1] It is noted that seven cases of cancer of the uterus were in the North-Western Hospital.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Report of the Registrar-General of the Irish Free State.

THE Registrar-General's report for 1927 shows that the number of deaths registered in that year was greater than in the previous, whilst marriages and births were less. The excess of births over deaths was more than balanced by the net emigration. The death-rate was 14·77 per 1000 of the estimated population, which is lower than the average rate for the previous ten years (15·39), but higher than the rate for 1926 (14·05). The increase in the number of deaths was chiefly due to influenza, heart diseases, and respiratory diseases. The principal epidemic diseases continued to decrease. The number of deaths from tuberculosis was the lowest recorded, the rate being 1·45 per 1000 of the population. The corresponding rate in Northern Ireland was 1·41, in England and Wales 0·97, and in Scotland 1·0. The deaths from cancer continued to increase, the total number, 3113, being the highest recorded. The increase of 92 over 1926 occurred entirely among males. The increase in cancer has not been continued from year to year, but successive rises suggest that the disease is advancing. Heart diseases were responsible for 5031 deaths, almost equally distributed between the sexes—2439 of males and 2592 of females. The number of deaths under this heading was 375 above that for 1926 and 275 above the average for the ten years 1917–26. The death of infants under one year of age showed a mortality-rate over the whole country of 71 per 1000 births, as compared with 74 per 1000 in 1926. In Northern Ireland the rate was 78, in England and Wales 70, and in Scotland 89. The low rate in the Irish Free State is due to the very low mortality (56 per 1000) in rural areas. In urban areas the rate was 99, and in the city of Dublin 123. The rate among illegitimate children is, however, startlingly high—288 per 1000—or more than four times the mortality among legitimate children.

The births registered during the year represented a rate of 20·31 per 1000 of the population, being 0·05 below the average for the previous ten years. The birth-rate in Northern Ireland was 21·3, in England and Wales 16·6, and in Scotland 19·8. Marriages gave a rate of 4·54 per 1000 of the population, a rate 0·03 below that for 1926 and 0·44 below the average for the ten years 1917–26. The number of emigrants in 1927 was 27,309, and the number of immigrants 2084, resulting in a net loss of 25,225. Of the 27,309 who left the country 23,947 went to the United States of America.

Celebrations at Trinity College, Dublin.

Dublin University was engaged last week in celebrating the bicentenary of the birth of two of her greatest sons—Oliver Goldsmith and Edmund Burke. Mr. Stephen Gwynn delivered an oration on Goldsmith and Lord Birkenhead one on Burke. Mr. Gwynn's address concerned itself mainly with the personal life of his subject, with a brief estimation of his position in literature. He did not pay special attention to the medical side of Goldsmith's career. The most interesting part of the celebration—and perhaps that which honoured most the spirit of both Burke and Goldsmith—was an admirable inter-university debate in which young men from the Universities of Oxford, Cambridge, Edinburgh, and Paris, and from University College, Dublin, took part with young men of Trinity College, Dublin. The subject was: That a Censorship of Literature is Desirable. The motion was defeated by a large majority.

DONCASTER INFIRMARY.—By weekly deductions of twopence from their wages miners in the Doncaster district this year have contributed £9700 to Doncaster Infirmary. In six years the total has reached £42,500.

Correspondence.

"Audi alteram partem."

CHRONIC SPASMODIC AFFECTIONS OF THE COLON.

To the Editor of THE LANCET.

SIR,—Dr. Ryle kindly refers to my book upon "Tonic Hardening of the Colon." I feel certain, however, that further study of this subject will show that the term "spasmodic" as applied to the condition referred to is not a satisfactory one even in the case of the small "contracted" colon which is sometimes shown by radiographs. Although spasm of the colon probably does occur it will, I feel sure, be ultimately agreed that the commonest cause of colon hardening is not muscular contraction but a tonic static fixation of some of the muscular fibres, a form of primitive muscular activity allied to the "postural activity" first described by Sir Charles Sherrington. It is, therefore, preferable to describe this condition as simply "tonic hardening" instead of using a term which implies a theory as to the cause of the hardening which further observation may prove to be incorrect.

I feel I must also offer a criticism of Dr. Cawadias's statement that "a precise knowledge of visceral neurology" is necessary for the accurate diagnosis of this condition. For more than 35 years I have noted the degree of hardening of the colon in nearly every patient that I have examined, and I have found that very simple measures suffice to control this so-called "spasmodic" condition when it occurs. As a rule this abnormal hardness of the colon speedily subsides if the patient be given an effective intestinal antiseptic combined with full doses of some drug containing atropine, preferably tincture of hyoscyamus in 20 to 30 minim doses.

In connexion with Dr. Crookshank's remarks as to the efficacy of psychotherapy, I feel sure that if he took two parallel series of cases showing abnormal hardness ("spasm") of the colon and treated the one series by psychotherapy and the other by means of full doses of hyoscyamus, together with salol in 10 gr. doses thrice daily (or, where not contraindicated, the mercury and iron antiseptic) and with proper regulation of the diet, he would find that the latter series would show far better results than the former.

Finally, with regard to Dr. Ryle's criticism that in my book I have overstressed the effect of colon hardening in causing nervous symptoms, I would like to point out that cases of this nature showing mental depression, obsessions, &c., often have no abdominal symptoms whatever, and the colon might be thought to be perfectly normal were it not for the fact that on palpation it was found to be hard and tender. The rapidity with which such cases yield to treatment by an intestinal antiseptic, hyoscyamus, and diet is often quite dramatic.

I am, Sir, yours faithfully,

Birmingham, Dec. 15th, 1928. T. STACEY WILSON.

PURE NEPHROSIS.

To the Editor of THE LANCET.

SIR,—In your account (p. 1240) of the discussion on "Purines as Diuretics" at the Royal Society of Medicine it is stated that I described pure nephrosis "as a functional imitation of what happened in mercuric chloride poisoning." Though I am myself doubtless responsible for this statement, I should be much obliged if you would give me an opportunity of shortly explaining my views on a subject which has greatly interested me. I have formerly had the opportunity of observing rapid recovery in cases of apparently pure nephrosis after many months of "waterlogged" condition, and in one similar case have unfortunately seen death occur following convulsions which supervened just when an intercurrent infection had been apparently recovered from. Such convulsions would have been formerly termed acute uræmic convulsions, though they are now known not to be really uræmic. They are probably due to spreading of the general œdematous process and the onset of intracranial œdema.

What I should have said in my remarks is that pure nephrosis is a disturbance in renal function of the same nature as that which occurs during one stage or degree of mercuric chloride poisoning. The condition of pure nephrosis is possible, I believe, in *only very few individuals*, and is best explained, according to my views, as the result of an idiosyncratic *response* on the part of the epithelium of the convoluted tubules towards certain microbic toxins (in some cases, for instance, the toxin of syphilis, just before the outbreak of ordinary secondary syphilitic manifestations). Non-microbic poisons, such as chloroform, may produce similar "parenchymatous" disturbance both in the kidney and liver at the same time.

In microscopic sections of the kidney from rare fatal cases of pure nephrosis (formerly classed as pure parenchymatous nephritis) the glomeruli appear not to be diseased, but the cells of the convoluted tubules are swollen and desquamating and appear to be blocking the dilated tubules. This is the "large white kidney" of pure nephrosis, which is to be distinguished from the "large white kidney" of amyloid disease and from the kidney of "lipoid nephrosis." The cortex of the latter is speckled with lipoid deposits (cholesterol), and also nearly always presents obvious signs of an old interstitial inflammatory process.

In pure nephrosis, according to the view that I am explaining, the swelling of the epithelium of the convoluted tubules is sufficient to partially (very rarely completely) obstruct the outflow of water and sodium chloride from the glomeruli and thus gives rise to the great diminution of urine, the retention of water and sodium chloride, and the general dropsy (waterloggedness) of the clinical picture; whereas just sufficient water probably passes through most of the convoluted tubules to carry away the urea excreted by the glandular cells of the tubules and thus prevent its undue accumulation in the blood.

In such matters mechanical explanations are not to be lightly accepted, but it seems to me that one is driven to some such theory as the above, which is after all very similar, I believe, to that most generally held at present.

I am, Sir, yours faithfully,

London, W., Dec. 16th, 1928. F. PARKES WEBER.

THE MODE OF EXPRESSING THE DIFFERENTIAL LEUCOCYTE COUNT.

To the Editor of THE LANCET.

SIR,—As the question of absolute or percentage leucocyte counts has been raised, I would say that Prof. Schilling has discussed this matter in a book [1] to which I called your readers' attention a few weeks ago. Schilling there remarks that absolute counts were proposed by Naegeli and others, but he discourages them in clinical work on the ground that they are obtained by combining two estimations (total and differential), neither of which is perfectly accurate, so that the results are the less certain. Moreover, the calculations involved will retard the receipt of the blood count, which the clinician wants as soon as possible as conditions change so quickly. There is another point. The absolute expression of the white cells sometimes makes the result of relative changes less apparent; Schilling instances the small relative neutrophilia of acute tubercle whether the total leucocytes are many or few, the relative monocytosis of malaria, and the persistently high relative

[1] Das Blutbild, 1926, p. 165; see THE LANCET, Nov. 24th, p. 1104.

neutrophilia of suddenly intercurrent sepsis, even where a total leucopenia exists from other causes. These, he says, may be easily missed if it is not the percentage count that is before the physician, although in purely scientific investigations absolute counts must be obtained.—I am, Sir, yours faithfully,

Kew, Dec. 15th, 1928. W. E. HOME.

THE RODS AND CONES.

To the Editor of THE LANCET.

SIR,—Mr. Edridge-Green's letter in your issue of Dec. 15th is anything but convincing. The absence of discussion on a paper at an international meeting may have other reasons than approval, upon which I need not enlarge. In his book on Colour-blindness in the International Scientific Series, Mr. Edridge-Green describes an experiment in support of his theory. It is shortly this: If we view a luminous object through an artificial pupil, a pinhole in a piece of paper, it has a certain brightness. If we move the artificial pupil away from the eye towards the object, the object becomes brighter. The reason is, says Mr. Edridge-Green, by moving the paper away from the eye, more light falls on the translucent sclerotic, more visual purple is liberated, and hence the object appears brighter. This would be in harmony with his theory, but unhappily he has misread the facts. There is a very simple elementary physical explanation for this observation. In moving the pinhole away from the eye towards the luminous object, it is moved towards the apex of the conical pencils of light from all the points of the luminous object—i.e., more light-energy from every point passes through the pinhole, and hence the object appears brighter. Now for a crucial experiment of Mr. Edridge-Green's explanation. I placed an electric bulb, with no current passing, next to my eye, viewed a luminous object through a pinhole and noted its brightness. Then I switched on the lamp. A great amount of light fell on the sclerotic and should have, according to Mr. Edridge-Green's theory, liberated more visual purple and increased the brightness of the object looked at, but *the brightness of the object remained unaltered*. I described, possibly demonstrated, the experiment to Mr. Edridge-Green, some 15 years or so ago at the Psychological Laboratory at University College. He thought it very interesting, but having no time to discuss it then, promised to return and discuss it later. However, this never happened.

A point in favour of v. Kries's theory, and easily observable by everyone, is this: If, when noticing a star of the lesser magnitudes in the peripheral field, we look at it directly (i.e., the star's image then falls on the fovea), it disappears, but as soon as we look at a point near by the star at once appears again in the peripheral field.—I am, Sir, yours faithfully,

Shortlands, Dec. 17th, 1928. A. WOHLGEMUTH.

SACRO-ILIAC PAIN OR SCIATICA?

To the Editor of THE LANCET.

SIR,—On more than one occasion you have allowed me to draw attention in your columns to various aspects of sacro-iliac pain, believing, as I do, that an immense amount of human suffering will be alleviated when pain from this source becomes generally recognised amongst the members of our profession. Then the treatment of pain in the lower part of the back may be placed on a more scientific basis than at the present time. It was therefore with the greatest pleasure that I read the address on sacro-iliac pain by Dr. Wilfred Harris on p. 1230 of your last issue. In this address Dr. Harris states that—

"Lasègue's sign in sciatica is the production of pain referred along the nerve when the leg is extended on the flexed hip, a sign already claimed by Goldthwait as due to sacro-iliac subluxation."

And then adds that we should—

"limit the value of his sign of sacro-iliac sprain to those cases in which the pain is referred to the actual joint region, whether or no there is also pain referred down the leg."

For many years past I have used this test with a very slight and simple addition which is, I think, conclusive in the differential diagnosis between the two complaints. When the hip is flexed and the knee is extended, the ankle-joint, being in a position of rest, is definitely plantar-flexed. When the movement has reached a stage at which pain is first felt, dorsi-flexion of the foot will lay no extra tension on the ham strings, and therefore on the sacro-iliac joint; while this movement must of necessity increase the tension on the terminal branches of the sciatic nerve. If, therefore, dorsi-flexion of the foot increases the pain in this position, it is safe to make a definite diagnosis of sciatica. If it fails to do so, the chances are very largely that the cause of the pain is due to a lesion of the sacro-iliac joint. Of course, it cannot be too strongly emphasised that the differential diagnosis of pain arising in the lower part of the back is so difficult and so complicated that it is impossible to rely on any one sign, but the sign I am now suggesting has withstood the test in the examination of many hundreds of cases, and it is but rarely that doubt has been thrown on its accuracy by the rest of the examination.

I do not know whether this observation has been published before. If so I am unaware of it, although many know of it, as I have frequently drawn attention to the value of the sign when lecturing on backache and allied troubles during the last seven years.

I am, Sir, yours faithfully,

JAMES MENNELL, M.D. Camb.

Park-crescent, W., Dec. 17th 1928.

CHILLY FEET.

To the Editor of THE LANCET.

SIR,—Repeated chilling of the feet is, no doubt, like other sorts of chilling, a common cause of illnesses of various kinds. Pasteur long ago found out that in poultry it brought on chicken cholera. That is to say, it lowered the resistance of the body so as to convert immunity into liability. I believe that a large proportion of the chills contracted in the winter months commence in the feet and are attributable to unsuitable footwear. We know that unless the leather is of good quality, and properly sewn and waterproofed, a boot or shoe must admit moisture. Feet shod in damp leather suffer from a double adverse exchange. They receive moisture from the ground, and lose heat to the ground. In the warm air of the house the loss of heat by evaporation also chills the feet. Everyone removes damp gloves on coming indoors. If persons with poor circulation always removed their outdoor shoes, like the French peasants, when they come into the house, they would find it easier to keep warm.

The wearer of sabots is in a happier case, for wood is a non-conductor, and sabots or light, well-made clogs, such as are used in gardening, keep the feet surprisingly warm and comfortable. So long as the feet are kept warm moisture is not injurious. Rubber over-shoes or the modern rubber boots over thick stockings keep the feet both dry and warm in winter since rubber also is a non-conductor. The drawback of rubber soles is that moisture is apt to creep in and be retained between the sole and the leather. Half-Wellingtons and high spats are, as is well known, useful for chilly feet in another way. If the ankles are not kept warm the blood-vessels contract and the blood-supply to the feet is diminished. Spats warm the feet and mittens warm the fingers by maintaining the blood-supply.

My reference, in a recent lecture at the Royal Institute of Public Health[1] to the methods of Kneipp at Wörishofen has caused some surprise. It does seem

[1] Rheumatism in Relation to Industry. Roy. Inst. of Public Health.

absurd to advocate the conservation of heat and also the exposure of the feet to cold. But physiology teaches that *in health* exposure to cold, especially when accompanied with muscular exercise, stimulates the circulation and increases metabolism throughout the body. For this reason walking barefoot in the grass may be beneficial for chilly persons. But all depends on the reaction produced. Cold, as a provocative of heat, must be used in measured doses. To obtain good results, not only the feet but the whole body must be *warmed by the cold*. There is a saying that "to maintain an agreeable warmth of the skin is one of the great secrets of health." To this I would add that those who keep their feet warm seldom suffer from chills or consequent catarrhs. I should like to know if this is a general experience.

I am, Sir, yours faithfully,

R. FORTESCUE FOX.

Devonshire-place, W, Dec. 6th, 1928.

SHOT IN THE VERMIFORM APPENDIX.

To the Editor of THE LANCET.

SIR,—The cases reported by Prof. John Fraser and others in your columns (THE LANCET, Dec. 1st and 8th) recall to my mind a patient admitted to the North Staffordshire Royal Infirmary on July 27th, 1926.

He gave a history of vague discomfort in the right iliac fossa, occasionally exaggerated into attacks of acute pain resembling renal colic and associated with frequent micturition and the passage of blood in the urine. Microscopic examination of the urine by his own doctor revealed an excessive number of *Bacillus coli*, with which diagnosis he was admitted to the North Staffordshire Royal Infirmary. Radiography showed a long, opaque outline in the region of the appendix (see figure), which caused considerable

doubt as to whether it was due to a calculus in the ureter or a solid concretion in the appendix. Opinion was divided, but the radiologist, Dr. A. H. John, of Stoke-on-Trent, was certain that the shadow was external to the line of the ureter. There was only a slight tenderness on deep palpation, and Bastedo's sign was persistently negative. There was no leucocytosis.

An operation was performed by Mr. George Blair on August 6th. The appendix was found free and successfully removed, and on section showed it to contain 42 pellets similar to those in the case reported by Prof. John Fraser. Recovery was uneventful, and the patient was discharged on August 23rd, 1926, to his work as a gentleman's chauffeur.

It was ascertained that in his capacity as chauffeur this man was often utilised as a beater, and was, accordingly, privileged to receive many gifts of game; and in no other way could he account for the swallowing of pellets than by the rapid bolting of his food. It is interesting that the symptoms he complained of were suggestive of an inflammatory condition of the urinary tract rather than trouble in the appendix. Since the operation his health has remained good, and no further pain on micturition and no further blood in the urine has been noted.

I am, Sir, yours faithfully,

A. WILSON GILL.

Hanley, Stoke-on-Trent, Dec. 13th, 1928.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments are notified:—Surg. Comdrs: J. D. Murphy to *Courageous*; J. C. Sinclair to *Birmingham*; B. R. Bickford to *Vivid*; W. G. Thwaytes to *Nelson*; J. G. Danson to *President* for three months' post-graduate course; H. L. P. Peregrine to *Adventure*; C. F. O. Sankey to *Victory*; A. A. Sanders to *Benbow*; J. M. Horan to *Vulcan*; J. F. M. Campbell to *Berwick*; A. G. Malcolm to *Egmont*; M. J. Aitken to *Cardiff*; and J. G. Boal to *Tamar*.

ROYAL NAVAL VOLUNTEER RESERVE.

Prob. Surg. Lt. H. P. Widdup is confirmed in his rank.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Lt.-Cols. retire on ret. pay: P. C. Douglass, B. R. Dennis, and C. A. J. A. B. Foote.

The undermentioned Majs. to be Lt.-Cols.: G. G. Tabuteau, vice Lt.-Col. P. C. Douglass, to ret. pay, and J. M. B. Rahilly, vice Lt.-Col. B. R. Dennis, to ret. pay.

ARMY DENTAL CORPS.

Maj. J. G. Worsley, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ARMY RESERVE OF OFFICERS.

A. W. Davidson to be Lt.

TERRITORIAL ARMY.

Col. J. G. Martin vacates the appt. of A.D.M.S. 55th (W. Lan.) Div.

Lt.-Col. (Bt. Col.) D. C. L. Orton, from Gen. List, R.A.M.C., to be Col., and to be A.D.M.S. 55th (W. Lan. Div.).

Capt. N. F. C. Burgess to be Capt.

ROYAL AIR FORCE.

The undermentioned Flight Lts. are transferred to the Reserve, Class Dii: E. A. Aslett and W. Parsons.

Temp. Capt. A. R. H. Bennett (General List, Army, Dental Surgeon) is granted a temporary commission as a Flight Lt. on attachment to the R.A.F.

Flight Lt. H. J. Procter is promoted to the rank of Squadron Leader (Dental) on promotion to the rank of Major in the Army Dental Corps.

The undermentioned Flying Officers (Temp. Lts., General List, Army) are promoted to the rank of Flight Lts. (Dental) on promotion to the rank of Temp. Capt. in the Army: H. I. Clapperton and A. P. McClare.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. L. Game resigns his commission on appointment to a commission in the Royal Army Medical Corps.

Flight Lt. B. C. W. Pasco relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE.

Capt. Homi Rustomji Cursetji to be Maj.

Lt.-Col. J. B. D. Hunter retires.

Temp. Capt. Bhagat Ram Tandon relinquishes his temp. commission and retains his rank.

COLONIAL MEDICAL SERVICES.

The following appointments have been made by the Secretary of State for the Colonies during the month of November: C. Burnett, J. Crawford, C. S. Davies, and W. C. Dale, medical officers, West African Medical Staff; R. A. McNab and C. H. Swapp, medical officers, Straits Settlements.

ROYAL ARMY MEDICAL COLLEGE.

The following prizes have been awarded to officers of the last junior officers' class at the Royal Army Medical College, London:—

Herbert Prize (for highest aggregate) and First Montefiore Prize in Military Surgery: Lieut. E. S. S. Lucas, I.M.S., St. Thomas's. Second Montefiore Prize in Military Surgery: Lieut. G. L. Grieve, R.A.M.C., Glasgow University. Ranald Martin Prize in Tropical Medicine: Lieut. M. R. Sinclair, I.M.S., Cambridge and St. Bartholomew's. Parkes Memorial Prize in Hygiene: Lieut. G. L. Grieve, R.A.M.C., and Lieut. H. W. Farrell, I.M.S., University College, Dublin (equal). Tulloch Memorial Prize in Pathology: Lieut. A. T. H. Marsden, R.A.M.C., Durham University. Fayrer Memorial Prize in Pathology: Lieut. V. E. M. Lee, I.M.S., Royal College of Surgeons, Ireland. Marshall Webb Prize (medical administration): Lieut. A. T. H. Marsden, R.A.M.C.

Obituary.

WILLIAM SMITH KERR, M.B., F.R.C.S. EDIN.

THE sudden death of Mr. W. S. Kerr deprives the medical profession in Sheffield of one of its most able members. The son of a doctor—William Smith Kerr, M.D., of Dumfries—he was born in 1869 and educated at Dumfries Academy and the University of Edinburgh. Graduating as M.B. in 1890 he returned to his own town as house surgeon to the Dumfries and Galloway Royal Infirmary, whence he found his way to Sheffield in 1891. At the Sheffield Royal Infirmary he remained as house surgeon, junior and senior, until 1895, when he resigned and started practice in Brookhill. Not long afterwards he joined the late Mr. Harry Lockwood in general practice, and after obtaining the Fellowship of the Royal College of Surgeons of Edinburgh in 1903 he was appointed by the infirmary authorities to found and take charge of the ear, nose, and throat department. Up to this time such work had been done by the general surgeons, but Kerr soon created a large out-patient department and found himself cramped for want of in-patient beds. As a reward of his untiring service and skill he lived to see a splendid block—the Princess Mary block— built for his special surgery, and there he worked during his last three years.

MR. W. S. KERR.

"He was honoured and most beloved," writes a medical friend, "because the foundation-stones upon which his character was built were devotion to duty and devotion to his fellow men. His was a personality brimming over with goodwill and kindly sympathy, which compelled the affection of everyone who knew him. No professional colleague ever spoke of him but in terms of sincere affection, and no patient ever thought of him but as a friend in time of need. It was perhaps in his dealing with children that this side of his character was most evident. No one who had witnessed the way in which he could win the confidence of a child and dispel all fear could fail to see that a great love of his fellows was the source of his power. Anything selfish in word and deed was completely foreign to his nature, and to those who knew him inconceivable. He was, moreover, firm and resolute in any course which he thought to be right and devoted heart and soul to his specialty. Quite apart from their personal regard his skill and efficiency were such as to command the complete confidence of colleagues and patients alike."

At the outbreak of war Mr. Kerr joined the Sheffield City Battalion as its first medical officer, but was subsequently transferred to the 2/3rd West Riding Field Ambulance, which he commanded in France. He returned home on account of ill-health, but became successively inspector of ambulances in the Eastern Counties and surgeon specialist to the 4th Northern General Hospital. He married Edith, daughter of Dr. C. S. Blythman.

FRANCIS WASHINGTON EVERARD HARE, M.D. DURH.

Dr. Francis Hare, who died at Beckenham on Dec. 9th after six days' illness, was a recognised authority on alcoholism, and had devoted nearly 30 years to the study of this addiction. Born at Dublin in 1858, the son of Matthias Hare, LL.D., he was educated at Fettes, and went to London as a medical student, first at St. Mary's and later at St. Thomas's Hospital. Taking the diploma of M.R.C.S. in 1879 he gained post-graduate experience at Newcastle Royal Infirmary, and graduated as M.B. Durh. in 1884, proceeding to the M.D. degree seven years later. After serving for some time as a ship's surgeon he settled in Queensland, Australia, where he was appointed medical superintendent of Charters Towers District Hospital, and acted for a time in the same capacity at Brisbane General Hospital. In course of time he became a consulting physician to the latter institution, and he also held the office of inspector-general of hospitals for the State. Although he did a considerable amount of general surgery and ophthalmic work in Australia, his chief interest lay in medicine, and when in 1904 he came home on grounds of health he found a congenial opening for his abilities in the post of medical superintendent of Norwood Sanatorium. This institution moved to Beckenham in 1909, and Hare was associated with it until three years ago. At this time he was in poor health; nevertheless he started a nursing home in Beckenham where with a colleague he was able to carry on the work to which he had been so long devoted. A pioneer in his specialty he was the author of a standard text-book on the clinical aspects and treatment of alcoholism, which was published in 1915. His knowledge and experience were wide, and where patients were concerned he was indefatigable and did not recognise defeat. A medical friend writes of him that he never complained of his own suffering, which was often intense, but always carried on, "his one interest being a successful cure or an improvement in a new patient. He was a man who made few friends, but his friendship was an invaluable one."

Dr. Hare married, in 1902, Ethel Maud, daughter of George Theodore Bell, of Brisbane.

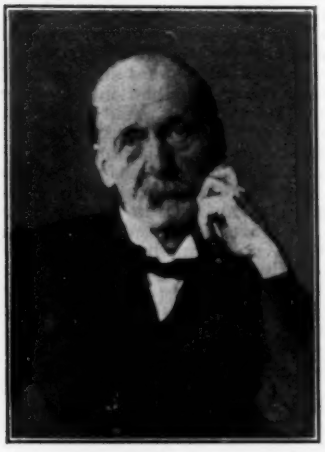
JOHN MCASKILL HENDERSON, M.B. EDIN., D.SC. ABERD.

Dr. J. M. Henderson, who died at Nairobi on Nov. 22nd, was born in Ayr in 1895, and had a distinguished career in the University of Edinburgh, where he graduated in arts, science, and medicine. He was prominent in the social life of the University, and was for varying periods president of the S.R.C., the Union, and of the Celtic Society. During the war he was employed as a chemist in a munition factory, having been rejected for military service. He graduated as M.B. in 1922, and after engaging for some time in general practice in Glasgow decided to take up research as a career. He went to the Rowett Institute at Aberdeen at the end of 1923 and studied the effects of ultra-violet light on metabolism and on problems connected with lactation. He had just begun to work on the metabolism of iodine when he went out to Kenya, along with other medical and agricultural graduates from Aberdeen, in charge of the medical team conducting an inquiry into nutritional problems in that colony. His work there was characterised by the same enthusiasm, thoroughness, and sound judgment as he had shown at Aberdeen, and it has thrown a new light on many problems concerning the health of the native. He had just wound up his experiments and was about to leave for

Aberdeen to see to the publication of his results when he contracted the disease that proved fatal to him. While his results remain as a contribution to medical science, the ideas derived from them by a foreseeing and constructive mind lie buried with him. He was always able to express these ideas in precise and lucid English, and his ability as a speaker will be long remembered. A man of wide interests and a broad mind, he was well versed in literature, music, and art, and was himself no mean draughtsman. His ready wit, his great fund of anecdotes, and amiable personality will be missed in the many social gatherings he attended. He leaves a widow.

JOSEPH PRIESTLEY, M.D. EDIN., D.P.H.

THE sudden death of Dr. Joseph Priestley on Dec. 15th came as a shock to his many friends. It is only a few months since the expression of keen regret on the part of all sections of the community at his enforced retirement by age-limit from the position of medical officer of health of Lambeth which he had worthily held for the long period of 32 years. These expressions of regret were accompanied by quite an unusual number of valuable presentations, and one from the medical practitioners of Lambeth gave especial pleasure to the recipient and indicated the very good feeling which always existed between Dr. Priestley and his colleagues.



DR. J. PRIESTLEY.

Joseph Priestley was a direct descendant of the famous theologian and man of science whose name he bore. He was already a graduate in arts of London University before he went to Edinburgh for his medical course. In 1883 he took his M.B. Edin., with a gold medal in medical jurisprudence and a prize in public health, and three years later his thesis for the M.D. was commended. After qualification Priestley obtained a wide range of clinical experience, for he was house surgeon to the Manchester Royal Infirmary, clinical assistant at Brompton, Great Ormond-street, and the Royal Westminster Ophthalmic Hospitals, and interne at the Rotunda. For a while he was in practice at Twickenham where he acted as medical referee to a number of insurance societies, was medical officer to Bath House School, and lectured for the St. John Ambulance Association. After a period as assistant medical officer of health at Camberwell he was appointed medical officer and public analyst to the Borough of Leicester. When he came to Lambeth Dr. Priestley had accordingly already made his mark as an outstanding sanitarian by his good work in Leicester in a similar position, and his energetic advocacy of environmental hygiene, and especially his crusade against the abominations of the so-called conservancy system, accepted at that time as inevitable, must be fresh in the recollection of many residents of that city. For many years Dr. Priestley took an active and leading part in the work of the Royal Sanitary Institute, and for at least two decades he was one of the secretaries of the Society of Medical Officers of Health. He was a foreign member of the Société d'Hygiène.

During his tenure of office at Lambeth Dr. Priestley saw many changes in the nature of the public health services, as was natural owing to the greater attention given nowadays to the individual, and he showed in his final report for 1927 (reviewed in another column) how a large staff could gradually be built up, and the remarkable contrast between the present mortality statistics and those of 1895, when he was first appointed to the parish of St. Mary's, Lambeth. Among his more noteworthy writings is a report on the physical condition of the working classes (1912), and articles on house drainage, infantile mortality, and small-pox epidemics in ill-vaccinated communities. Dr. Priestley left Lambeth in a very much better sanitary condition than he found it. This is not the place to attempt to evaluate the effect of the various public health measures he introduced. The verdict of his compeers is that Joseph Priestley was an able and hardworking leader in a hygienic movement which has resulted in great benefit to the health of London and that he had in large measure the gift of getting the reforms which he visualised translated into practice.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LOCAL GOVERNMENT BILLS: FINANCIAL RESOLUTIONS.

IN the House of Commons on Friday, Dec. 14th, the financial resolutions in connexion with the Local Government Bill and the Local Government (Scotland) Bill were agreed to on report.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 12TH.

Orthopædic Treatment of School-children.

Mr. THOMAS GRIFFITHS asked the President of the Board of Education whether, in view of the urgency for more beds for treatment for orthopædic diseases in children from the elementary schools in Hampshire, he would consider payment of a grant on any further expenditure incurred to provide more beds over the 12 beds now allotted for this purpose by local generosity at the Treloar Cripples' Home at Alton.—Lord EUSTACE PERCY replied: The Hampshire Education authority are, I understand, examining the question of extending their arrangements for orthopædic treatment for school-children in their area. I am prepared to consider sympathetically any proposals for such extension which the authority may see fit to formulate. Grant will be payable on expenditure for this purpose approved by the Board in the ordinary way.

Poor-law Authorities and Medical Treatment.

Viscountess ASTOR asked the Minister of Health what amount the poor-law authorities had spent for each of the last three years for which figures were available on such treatment of the sick as would be transferred to the public health authorities under the Local Government Bill.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: I am afraid that exact figures are not available, but the approximate expenditure of poor-law authorities on the services mentioned in the question was £9,150,000, £9,530,000, and £10,160,000 in the years 1924–25, 1925–26, and 1926–27 respectively. These figures include expenditure on the maintenance of persons in poor-law institutions, for persons suffering from disease of body or mind, and in the sick and infirm wards of other poor-law institutions, and on domiciliary medical relief.

Lotteries for Hospitals.

Commander BELLAIRS asked the Home Secretary whether the Government would consider the question of issuing licences for lotteries in aid of hospitals, charities, &c., in view of the differences of police action in various parts of the country since various decisions in the High Court as to Lottery, Gaming, and Betting Acts.—Sir W. JOYNSON-HICKS replied: All public lotteries are unlawful, whether for charity or otherwise, and I have no authority to grant exemption from the law. This would require fresh legislation.

Road Accidents and the Provision of Mortuaries.

Mr. ALBERY asked the Minister of Transport whether he was aware of the fact that the numerous fatal accidents resulting from the increased use of the roads were causing concern to many local authorities and parish councils who were without the use of any mortuary; and that it was becoming increasingly difficult to find suitable accommodation after such fatal accidents; and whether he had consulted with the Home Secretary and the Minister of Health with a view to issuing fresh regulations on this subject or to varying in any way the present instructions.—Mr. CHAMBERLAIN (Minister of Health) replied: Local authorities under the Public Health Act, 1875, have full powers to provide mortuaries, and where there is need for further accommodation representations should be made to the appropriate local authority. I am not aware that any instructions or regulations have been issued dealing with this matter.

Schools of Medicine and Women Students.

Sir ROBERT THOMAS asked the Minister of Health the number of schools of medicine in London and the rest of the country respectively from which women were excluded; and whether, in view of the increasing need of women with medical knowledge, he would set up an inquiry with a view to removing these restrictions.—Sir KINGSLEY WOOD replied: My right hon. friend has no official information on this matter, but he understands the position outside London to be that there is no restriction on the admission of women to medical schools. The position in London already forms the subject of an inquiry initiated by the University of London.

Dr. WATTS: Is it not a fact that the medical profession is already overcrowded and that there are many men who cannot find anything to do?

No answer was given.

THURSDAY, DEC. 13TH.

Silicosis and Workmen's Compensation.

Mr. DAVID GRENFELL asked the Home Secretary whether the regulations for grant ng compensation to men disabled by silicosis would provide for those cases where total disability had already been proved to be due to this form of occupational disease.—Sir W. JOYNSON-HICKS replied: No, Sir. I am advised that I should have no power under the Act to give this scheme any such retrospective application.

Poor-law Relief in Glamorgan.

Mr. GEORGE HALL asked the Minister of Health the number of persons in receipt of poor relief in the county of Glamorgan on the latest available date, and for the corresponding date for the years 1913, 1925, 1926, and 1927 respectively; and if he would give the figures for each poor-law union separately.—Mr. CHAMBERLAIN replied: The following is the table asked for:—

Name of poor-law union.	Number of persons in receipt of poor-law relief (excluding lunatics in asylums, casuals, and persons in receipt of domiciliary medical relief only) on the last Saturday in November.				
	1913.	1925.	1926.	1927.	1928.
Bridgend and Cowbridge	1,878	9,904	33,313	5,070	4,588
Cardiff	5,090	13,521	18,575	13,878	11,314
Gower	240	360	918	356	361
Merthyr Tydfil ..	4,080	22,018	65,077	12,621	14,424
Neath	3,027	10,297	29,191	8,662	8,152
Pontardawe	704	1,174	7,422	1,289	1,308
Pontypridd ..	6,903	30,180	82,389	18,307	20,337
Swansea	3,625	6,057	14,596	8,195	6,457
Totals for Union County of Glamorgan	25,547	93,511	251,481	68,378	66,941

School Dental Service in Wales.

Sir ROBERT THOMAS asked the President of the Board of Education what was the number of schools in Wales which had a dental service; how many dentists were employed; the number of children who had their teeth inspected during the last school year; the number who received treatment; and the estimated total cost.—Lord EUSTACE PERCY replied: I am unable to state the number of schools in Wales which have a dental service, but the number of education authorities undertaking dental treatment is 27 out of a total of 30. The number of dentists employed is 45. The number of children dentally inspected during 1927 was 162,605, and the number treated 68,345. The total cost of the salaries of the school dentists was, approximately, £18,000, and additional expenditure was incurred for travelling expenses, premises, equipment, dental attendants, &c.

Grants for Maternity and Child Welfare.

Mr. BRIGGS asked the Minister of Health what was the amount of the grants given last year for maternity and child welfare.—Mr. CHAMBERLAIN replied: The amount of the grants for maternity and child welfare paid in the last financial year out of the vote for the Ministry of Health was, approximately, £1,040,000, including about £16,000 in respect of the training of midwives and health visitors.

Mr. BRIGGS: Would my right hon. friend welcome the receipt of further money from the Treasury for these purposes?—Mr. CHAMBERLAIN: Yes, I should always welcome money from the Treasury for these grants.

Mr. MARCH: Has the right hon. gentleman given notice to any of these maternity and child welfare centres to reduce the amount they are now allowed for expectant mothers?—Mr. CHAMBERLAIN: No distinction is drawn.

Government Grant to Cambridge University.

Sir HARRY BRITTAIN asked the Chancellor of the Exchequer whether it was proposed to offer the University of Cambridge a grant towards the sum required to enable it to accept the offer of the International Education Board of the Rockefeller Foundation; and, if so, of what amount.—Captain BOWYER replied: The Government have decided to offer to the University a grant of £50,000 subject, of course, to the provision of funds by Parliament. They believe that the highest national as well as imperial and international interests demand that the great scheme made possible by the generous benefaction of the International Education Board should be fully carried into effect for the advancement of agriculture and of the fundamental sciences on which agriculture depends.

Caseous Lymphadenitis in Imported Mutton.

Mr. WILLIAM THORNE asked the Minister of Health the terms of the clauses in the Foreign Meat Regulations dealing with the disease of caseous lymphadenitis in imported mutton, and the instructions to inspectors of meat and food when carcasses were found to be infected; and whether the whole carcass or only the affected parts had to be destroyed.—Mr. CHAMBERLAIN replied: The effect of Articles 7, 8, and 9 of the Public Health (Imported Food) Regulations is that the medical officer of health of a port, or riparian sanitary authority, may examine imported meat and apply to a justice to order its condemnation if he is of opinion that it is diseased, or unsound, or unwholesome, or unfit for human consumption. A memorandum issued by my department as to the criteria to be adopted in the inspection of meat recommends the condemnation of the entire carcass and all the organs if evidence of caseous lymphadenitis is found.

MONDAY, DEC. 17TH.

Sickness among Women Clerks.

Miss BONDFIELD asked the Minister of Health what was the average number of days sick leave per head per annum taken by women in the writing assistant, typing, and clerical grades, respectively, in the Ministry of Health during the years 1925, 1926, and 1927; and what was the average number of days sick leave per head per annum in the case of each grade concerned taken on account of nervous troubles.—Mr. CHAMBERLAIN replied: The average number of days sick leave per head per annum taken by women in the writing assistant, typing, and clerical grades, respectively, in my department, during the years 1925, 1926, and 1927, was as follows:—

	1925.	1926.	1927.
Writing assistants ..	12·8	9·5	10·5
Typing staff—			
(*a*) Established ..	19·0	16·6	13·6
(*b*) Unestablished ..	13·9	10·2	13·2
Clerical Officers	13·2	11·8	13·9

I regret that I am unable to give the information asked for in the last part of the question, as it could not be obtained without an undue amount of time and labour.

Miss BONDFIELD asked the President of the Board of Education what was the average number of days sick leave per head per annum taken by women in the typing and clerical grades, respectively, in the Board of Education during the years 1925, 1926, and 1927; and what was the

average number of days sick leave per head per annum in the case of each grade concerned taken on account of nervous troubles.—Lord EUSTACE PERCY replied: The answer to the first part of the question is contained in the following statement:—

Leave year ending—		Days per head per annum.
Jan. 31st, 1926 ..	.. Clerical ..	14·6
	.. Typing ..	13·1
Jan. 31st, 1927 ..	.. Clerical ..	10·7
	.. Typing ..	10·6
Jan. 31st, 1928 ..	.. Clerical ..	12·5
	.. Typing ..	8·5

With regard to the second part of the question, the information asked for is not available.

Street Accidents to Children.

Mr. DAY asked the Home Secretary the number of street accidents to children for the 12 months ended to the last convenient date.—Sir V. HENDERSON (Under Secretary to the Home Office) replied: I can only give the figures for London (Metropolitan Police District and City of London). The figures for the 12 months to Sept. 30th last are: killed 238, and injured 10,877.

Medical News.

UNIVERSITY OF OXFORD.—At a congregation on Dec. 17th the following degrees were conferred:—

D.M.—A. Q. Wells.

B.M.—G. G. Hill, J. C. Neely, Joyce Wright, and Margaret A. L. Herbertson.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Honours.—G. W. Ayres (*d*), St. Mary's Hosp.; Elizabeth Cooper (*b*), London (R.F.H.) School of Medicine for Women; H. P. Himsworth (*a, b, e,* University Medal), Univ. Coll. Hosp.; C. A. Keele (*a*), Middlesex Hosp; G. W. Rake (*a, d*), Guy's Hosp.; and R. W. Reid (*b, d*), St. Thomas's Hosp.

(*a*) Distinguished in medicine; (*b*) in pathology; (*d*) in surgery; (*e*) in midwifery.

Pass.—S. I. Abrahams, Guy's Hosp.; G. T. Allerton, London Hosp.; Sophia Antonovitch, London (R.F.H.) School of Medicine for Women; Harris Avery, Charing Cross Hosp.; Olwen R. Binyon, St. Mary's Hosp.; G. W. Black, Middlesex Hosp.; G. N. Box, St. Thomas's Hosp.; Marjorie F. Brierley, Univ. Coll. Hosp.; Emily E. Cass and Stuart Craddock, St. Mary's Hosp.; W. P. M. Davidson, St. Bart.'s Hosp.; John Davies, Westminster Hosp.; S. J. M. De Navasquez, Guy's Hosp.; Irene Dixon, Charing Cross Hosp.; Marjorie M. Dobson, London (R.F.H.) School; C. P. Donnison, London Hosp.; Elsie M. Douglas, Univ. Coll. Hosp.; David Ellis, Guy's Hosp.; Alexandra G. H. English, London (R.F.H.) School; M. R. Ernst, St. Bart.'s Hosp.; Horace Evans, London Hosp.; Geraldine W. Everett, London (R.F.H.) School; A. P. Farmer, St. Thomas's Hosp.; A. McK. Fleming, Middlesex Hosp.; G. G. Gillam, Univ. Coll. Hosp.; Helen M. Herbert and Alice D. M. Hodge, London (R.F.H.) School; Muriel S. Hulke, Univ. Coll. Hosp.; Philip Inwald, Middlesex Hosp.; I. J. Jones, St. Thomas's Hosp.; R. M. Jones and D. F. Kanaar, Guy's Hosp.; E. M. Lourie, Univ. Coll. Hosp.; Samuel McGladdery, St. Bart.'s Hosp.; Murdo Mackenzie, Guy's Hosp.; Hugh Mannington, Middlesex Hosp.; W. H. Miller, Guy's Hosp.; M. B. Mody, Univ. Coll. Hosp.; C. F. Moore, St. Bart.'s Hosp.; G. E. B. Payne and Mary E. Pease, Univ. Coll. Hosp.; David Preiskel, St. Bart.'s Hosp.; Morris Rothkopf, Middlesex Hosp.; Clarice A. Skidmore and C. F. J. Smith, St. Mary's Hosp.; Edith J. L. Smith, London (R.F.H.) School; E. R. Smithard, Middlesex Hosp.; Eileen R. B. Snow, London (R.F.H.) School and St. Mary's Hosp.; J. G. Thwaites, St. Thomas's Hosp.; Phyllis D. Towell, London (R.F.H.) School; Scott-Russell Trick, Guy's Hosp.; Gladys M. Tullidge, London (R.F.H.) School and St. Mary's Hosp.; A. G. Watkins and A. R. N. Whitlow, Univ. Coll. Hosp.; P. C. Wickremesinghe, Guy's Hosp. and Ceylon Med. Coll.; L. A. Willmott, St. Bart.'s Hosp.; Jessie Wiltshire, Univ. Coll. Hosp.; Elsie E. Wright, St. Mary's Hosp.; and Winifred M. Wright, London (R.F.H.) School.

The following have passed in one of the two groups of subjects:—

Group I.—Nancy M. Badeley, London (R.F.H.) School; S. W. Barber, St. Bart.'s Hosp.; Annie G. Busher and Beatrice A. Butterworth, London (R.F.H.) School; K. J. H. Davies, Guy's Hosp.; Hilda C. Dean, Charing Cross Hosp.; C. J. Donelan, St. Bart.'s Hosp.; Mark Footerman, Univ. Coll. Hosp.; A. P. Gaston, St. Bart.'s Hosp.; H. N. W. Harley, Guy's Hosp.; Kathleen Horne, Univ. of Leeds; Philip Kaplin, St. Mary's Hosp.; G. H. Livingstone, King's Coll. Hosp.; J. F. Mackenzie, Guy's Hosp.; K. W. Mackie, St. Bart.'s Hosp.; Hermia M. Mills, London (R.F.H.) School; M. L. Mistri, Grant Med. Coll., Bombay, and Guy's Hosp.; Doreen G. C. Nixon Univ. of Bristol; Joan M. Oldaker, London (R.F.H.) School; and S. A. Wickramasinghe, Ceylon Med. Coll. and St. Bart.'s Hosp.

Group II.—Lucy E. Arthur, London (R.F.H.) School; Julia C. H. Avery, St. Mary's Hosp.; E. C. B. Butler, London Hosp.; E. O. Harris, Middlesex Hosp.; Dorothy P. Hytch, London (R.F.H.) School; J. V. Macgregor, Univ. Coll. Hosp.; Joyce Morgan, Westminster Hosp.; D. T. R. Morris, Univ. Coll. Hosp.; C. B. Picken and H. W. A. Post, Guy's Hosp.; H. G. G. Robertson, St. Thomas's Hosp.; Elizabeth H. Scurfield, London (R.F.H.) School; E. J. J. Smith, St. Bart.'s Hosp.; P. A. M. Soutter, Westminster Hosp.; Frances J. Vinter, London (R.F.H.) School; W. H. S. Wallace, St. Thomas's Hosp.; A. J. Watson, Middlesex Hosp.; J. W. Wigg, E. A. Wood, and B. A. Young, Univ. Coll. Hosp.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Primary Examination for the Fellowship held from Dec. 4th to 14th, 168 candidates presented themselves and 45 were approved. The following are the names and medical schools of the successful candidates:—

A. Ali, M.R.C.S., Cairo and London; R. M. Alderton, London; M. A. E. Anous, M.B., Cairo and St. Mary's; E. T. Bannister, Univ. Coll.; J. H. B. Beal, Oxford and St. Bart.'s; F. Bicknell, Oxford and St. Thomas's; G. H. H. Booth, M.B., Manchester; G. N. Clark, M.B., Aberdeen; A. C. Copley, M.B., Cambridge and Guy's; D. Davidson, Univ. Coll.; J. R. Dogra, M.B., Lahore and Middlesex; L. P. J. Evans, Cambridge and St. Bart.'s; F. G. Fenton, M.B., Melbourne and Middlesex; M. L. Formby, M.B., Adelaide and St. Mary's; R. L. Forsyth, M.B., Dublin and Roy. Coll. Surg., Ireland; F. Forty, M.B., Univ. Coll. and Middlesex; A. C. Frazer, St. Mary's; T. Giblin, M.B., Melbourne and Middlesex; A. J. B. Goldsmith, Middlesex; R. Grainger, M.B., Belfast; J. I. Griffiths, M.B., Cardiff and King's Coll.; H. E. Harding, London; C. H. S. Harris, St. Bart.'s; A. Helmy, M.R.C.S., St. Thomas's and King's Coll.; T. V. Jacob, M.B., Bombay and King's Coll.; E. F. King, M.B., Bristol; R. J. C. Maxwell, M.B., Belfast, Manchester, and Middlesex; S. J. Mehta, M.B., Bombay and Middlesex; J. G. Milner, B.Chir., Cambridge and St. Bart.'s; R. W. C. Murray, Cambridge and St. Mary's; J. E. A. O'Connell, St. Bart.'s; M. C. W. Oldfield and J. H. Peel, Oxford and King's Coll.; G. M. Phadke, M.B., Univ. Coll. and Middlesex; A. S. Rajasingham, M.R.C.S., Ceylon and King's Coll.; A. de W. Ranken, Durham; J. H. Saint, M.D., Durham; J. G. Sandrey, M.B., Sydney; C. M. Smithies, M.B., Leeds and Middlesex; G. V. Stephenson, M.B., Belfast and London; N. C. Tanner, Bristol; T. Thornton, M.B., St. Andrews and Middlesex; J. B. Tracey, Cambridge and St. Bart.'s; J. G. Wigley, M.R.C.S., Cambridge, St. Thomas's and St. Mary's; and J. W. Wilson, M.B., Glasgow and Middlesex.

UNIVERSITY OF EDINBURGH.—At a graduation ceremonial on Dec. 14th the following degrees were conferred:—

M.D.—A. M Affleck, Henry Buist, A. H. Campbell, J. L. Chisholm, †E. C. Ellis, •A. M. M. Grierson, S. E. Kark (in absentia), D. R. Lewis, †Neil Macleod, Rosemary O. Morris, H. A. Murray (in absentia), †B. R. Nisbet, •D. H. Paterson, †Alison Ritchie, Archibald Ronald, •Jessie C. B. Sym, †A. B. Walker, †John Ware, and Alexandra A. Warnock (in absentia).

• Highly commended for thesis. † Commended for thesis.

M.B., Ch.B.—C. P. Beattie, Louis Begleman, Philip Beinart, G. M. Bell, R. H. B. Bell, Donald Blatchley, Matilda F. Correa, Robert Cumming, ‡I. A. G. L. Dick, P. K. S. Gupta, Isaac Karro, Anna M. M. Kerr, E. T. Low, Crichton MacGaffey, James M'Lean, William More, J. H. Paton, Cecil Ramdeholl, Andrew Ramsay, R. S. Ritson, I. R. W. Smith, C. J. S. O. Taylor, and W. P. Wallace.

‡ With honours.

UNIVERSITY OF LIVERPOOL.—At recent examinations the following candidates were successful:—

M.D.

T. A. Clarke, R. W. Eldridge, J. E. Howie, D. U. Owen, Helen Standring, and A. G. Wilkinson.

M.B. AND CH.B. WITH HONOURS.

Class II.—•Elizabeth B. Robson, and •E. L. Rubin.

FINAL EXAMINATION FOR M.B. AND CH.B.

Part III.—A. E. Adams, N. J. Crawford, J. H. St. B. Crosby, A. Dala, J. E. Jones, L. de Jongh, Hilda M. C. MacMahon-Garry, •J. S. Mather, C. T. Mercer, G. W. Molyneux, E. E. Prebble, Ivy H. Rowlands, G. A. Talwrn-Jones, and F. J. Welton.

• With distinction in surgery.

Old Regulations, Part I.—A. Gardner, Teresa Lightbound, and R. G. Walker. *Part II.*—F. J. H. Crawford, and A. M. Russell.

UNIVERSITY OF MANCHESTER.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B. AND CH.B.

Alice M. Butterworth, I. M. Hughes, E. P. Johnson, J. S. Miller, J. W. Murray, Evelyn I. M. Sheppard, R. F. Stubbs,

Raymond Whitehead, R. T. Wimmer, and Frederick Wraith.

Forensic Medicine.—Leslie Bold, Christobel M. Hall, E. Z. Levy, A. S. McGowan, and Alan Taylor.

Hygiene and Preventive Medicine.—Leslie Bold, Christobel M. Hall, E. Z. Levy, A. S. McGowan, J. H. Pattyson, E. J. B. Sewell, and Alan Taylor.

Obstetrics and Surgery.—Mary I. C. Mackintosh, and Marian M. Reekie.

UNIVERSITY OF BIRMINGHAM.—At a congregation on Dec. 14th the following degrees were conferred:—

M.D.—H. P. Jameson.

M.B., Ch.B.—T. C. Dance, L. W. Downie, A. H. J. Jackson, T. W. Masters, M. K. Omar, Elizabeth S. Smith, and K. A. Thomas.

The Diploma in Dental Surgery has been awarded to Cyril Ford, C. E. Godfrey, E. S. Kench, W. R. E. Pickworth, and E. H. Sharp.

FINAL EXAMINATION FOR L.D.S.

C. Ford, C. E. Godfrey, E. S. Kench, W. R. E. Pickworth, and E. H. Sharp.

UNIVERSITY OF LEEDS.—At recent examinations the following candidates were successful:—

FINAL EXAMINATION FOR M.B. AND CH.B.

Part II.—T. G. Clarke, J. Donovan, L. B. Flather, H. T. Knowles, Margaret F. Robertson, and S. Simon.

Part III.—*T. L. Owen, *N. Pyecroft, *J. O. Terry, S. G. Bedford, S. Bregman, A. Dalby, J. Donovan, Dorothy Halstead, C. R. Hiley, H. Hopkinson, W. E. L. Lawson, R. J. H. Raines, D. R. Riddell, Doreen M. Robertshaw, and L. Smith.

* Second-class Honours.

FINAL EXAMINATION FOR B.CH.D.

J. R. S. White.

D.P.H.

Fannie Hirst and W. A. D. Lawson.

D.P.M.

D. K. Bruce and D. Perk.

The West Riding panel practitioners' prize in medicine has been awarded to Trevor Lynn Owen.

ROYAL INSTITUTION.—On Tuesday, Jan. 29th, 1929, Prof. J. S. Huxley will give the first of six lectures on Evolution and the Problem of Species. The lectures on subsequent Thursdays include three by Sir William Bragg on the Early History of X Rays.

INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS, Owing to the expiration of the lease of 28, Bedford-square, W.C., the offices of this organisation, including the Central Bureau of Hospital Information and the editorial office of the *Hospital Gazette*, are being transferred on Dec. 27th to Sentinel House, Southampton-row, London, W.C. 1. Tel.: Museum 8340.

ROYAL SANITARY INSTITUTE.—The following sessional meetings will be held at the Institute, 90, Buckingham Palace-road, London, S.W.: On Tuesday, Jan. 8th, 1929, at 5.30 P.M., Prof. Bostock Hill will open a discussion on Cleanliness: Is It the Basis of Health. On Friday, Feb. 1st, at 5 P.M., Major F. R. Humphreys will open a discussion on The Civilian Population and Chemical Warfare. Both of these sessional meetings will be held at the Institute, 90, Buckingham Palace-road, London, S.W.

DONATIONS AND BEQUESTS.—Miss Mary Caroline Hensley, Findon, Sussex, who left £12,130, besides other bequests, left the residue of her property to the London Hospital.—Mr. Sydney Frank Stott, of Woodleigh, Cheadle, Cheshire, left £1000 to Oldham Royal Infirmary and after various personal bequests the residue of the estate, amounting to over £19,000, also to the infirmary.—Mr. Thomas Kirk, of Oaklea, Norton, Stockton-on-Tees, Durham, left £1500 to the Stockton and Thornby Hospital to endow a bed for the use, as far as possible, of workmen of the Carlton Iron Company, Ltd., and £250 to St. Dunstan's Home for Blind Soldiers.—Miss Mary Jane Kolle, Tulse Hill, London, S.E., left £12,000 for charities. The testatrix gave £1000 each to Guy's Hospital, the London Hospital, and St. Bartholomew's Hospital, and St. Dunstan's Hostel if her brother considers it is in need of funds, the National Lifeboat Institution, and four other institutions; £500 to the Royal Hospital for Incurables, Putney; and £250 each to the Association for Promoting the Welfare of the Blind, the Royal Eye Hospital, Southwark, the Royal Blind Pension Society, the Royal National Orthopædic Hospital, and seven other institutions.—Mr. Alexander John Cameron, of Beechwood, Perth, left £1000 to the County and City of Perth Royal Infirmary, and £500 to the Ross Memorial Hospital, Dingwall.

THE death is announced of Mr. J. Langford Moore, F.C.S., pharmacist to St. Bartholomew's Hospital. A memorial service was held in the Church of St. Bartholomew-the-Less on Dec. 19th.

A RAILWAY MEMORIAL HOSPITAL.—A hospital in memory of the old boys of the Southern Railway Servants' Orphanage at Woking is being erected in the grounds of the institution.

GRANTS FROM KING EDWARD'S FUND.—At a meeting of the general council of the Fund yesterday week it was decided to distribute £257,452, which includes ordinary maintenance grants, grants towards capital expenditure, and special pensions grants. Adding the final distribution out of the Wells legacies in May last, the grand total distributed to hospitals in 1928 is £288,202, besides £2000 to convalescent homes.

MEDICO-LEGAL SOCIETY.—The annual dinner of this Society was held at the Holborn Restaurant on Dec. 14th, with Sir William Willcox, the President, in the chair. In the absence of Earl Russell, the toast of "Medicine and Law" was proposed by Dr. F. G. Crookshank, who said that in listening to speakers at previous dinners he had sometimes doubted whether the toast was not "Medicine *versus* Law." It always interested him to hear lawyers referring to the British Medical Council and the General Medical Association, and he thought he might fairly retaliate by speaking of Sir Thomas Hughes, who was present that evening, as Chairman of the General Law Society or of the Bar Council Association. Sir Thomas Hughes, responding, repudiated the idea of any contest between medicine and law, which were sister professions, both concerned with doing their best for their fellow men. The doctor looked after their bodies and perhaps their souls, too, whilst the law looked after their character, property, and reputation. Medical victories had no shade of disappointment about them, since in medicine all were allied in fighting the common enemy. The lawyer, on the other hand, was always fighting someone else. Nevertheless, as Lord Bramwell had consolingly remarked: "In a long career at the Bar I have lost many cases I ought to have won, and won many cases I ought to have lost; and so on the whole justice is done." Dr. Walter Carr, President of the Medical Society of London, said it was the doctor's function to consider the well-being of his patients irrespective of laws and rules; whereas the lawyer had to put every possible obstacle in the way of arriving at a decision. Medical men would cheerfully sacrifice regulations to give their patient a chance of life, and perhaps they were too apt to follow the same course of action into spheres in which there was not the same urgency. Dr. Carr served with medical and legal colleagues on the committee of a charity and found that his medical friends were always ready to say: "Hang the standing orders." To which the lawyers replied: "You cannot hang a standing order; you can only suspend it; and you can only do that if due notice is given for one month and the decision is taken by two-thirds vote." The lawyer set great store by dates and would refuse a scholarship to a boy who by one day was born in the wrong year. Such a course seemed unjustifiable to medical men, who knew that the child's too early birth might well be due to the intervention of one of their colleagues anxious to have a night's rest. Mr. Justice Branson, proposing the toast of the "Medico-Legal Society," argued that there must always be a stile at which someone would stick. He held that there was much in common between the two professions, both of which were engaged in discovering the unknown from the known. Sir William Willcox, replying, said the Society was now in its twenty-sixth year and had gained 34 new members during the past 12 months. Eight meetings had been held and seven papers had been read, five by medical and two by legal members. The last had been given by Dr. Weatherly, now in his eightieth year, and had proved one of the best ever given to the Society. The discussions served a useful function in keeping members in touch with the modern developments of medicine and law, and this was very necessary since text-books were always several years out of date when they were published. Members also learned to know and appreciate one another, and doctors who belonged to the Society would find themselves well prepared for the ordeal of going into the witness-box. Lawyers required to be understood, and at a society like this the medical man would find himself beginning to understand them. Sir William concluded by referring to the valuable work done during the past year by the Hon. Treasurer (Sir Walter Schröder), the Hon. Secretaries (Sir Bernard Spilsbury and Mr. Ernest Goddard), and the Editors of the Society's *Transactions*. The toast of "The Guests" was proposed by Mr. Justice Humphreys and responded to by Sir Leonard Kershaw and Sir Malcolm Delevingne.

RESEARCH ON ASTHMA.—The Halley Stewart Trust has made a grant of £2500 to the Asthma Research Council for the establishment of special clinics at Guy's Hospital and the Hospital for Sick Children, Great Ormond-street, for research into the cause and treatment of asthma and allied diseases.

MEMORIAL TO THE LATE MR. GEORGE HEATON.—A new balcony to one of the children's wards at the General Hospital, Birmingham, has been presented to this institution by 11 nieces and nephews of the late Mr. George Heaton, who was hon. surgeon to the hospital from 1894 to 1919. It will be remembered that the late Mr. Heaton who always took a deep personal interest in the General Hospital left £1000 on trust for prizes in connexion with the medical and nursing staff.

THE PENSIONS MINISTRY AND ARTIFICIAL LIMBS.—According to the report of the Ministry of Pensions for the year 1927–28, the Ministry still has under its care more than 36,000 persons with artificial limbs. During the year 6311 limbs were supplied, most of them renewals; more than 51,000 limbs were repaired. The number of artificial legs was 5205, of which 3404 were light metal legs.

PRESENTATIONS TO MEDICAL MEN.—Mr. W. F. Haslam was recently presented with a silver tray and a cheque on his retirement from active service in the Birmingham Medical School. He has held a succession of offices since his appointment to the staff of the General Hospital in 1882 and was Dean of the Faculty of Medicine in the University of Birmingham from 1919 until his resignation in May of this year. The silver tray presented to him was inscribed as follows:—

"Presented (with a cheque) to William Frederick Haslam, M.B., F.R.C.S., by Colleagues and Friends in the University of Birmingham on his retirement from his office of Dean of the Faculty of Medicine, a token of affection and gratitude for valuable services to the Medical and Dental Schools and the University during a period of 46 years, 1882–1928."

Dr. James Allan Gray, who has been medical officer of health for Leith and medical officer and lecturer on clinical medicine to the Leith Hospital, has completed 50 years of practice in connexion with the town. To mark the occasion his fellow practitioners recently presented Dr. Gray with a barograph and a cheque.

THE LATE MISS EGLANTYNE JEBB.—Miss Jebb, co-founder and honorary secretary of the Save the Children Fund, who died at Geneva last Monday at the age of 52, was the eldest daughter of the late Mr. and Mrs. Arthur Trevor Jebb, of Ellesmere, and niece of the late Sir Richard Jebb, Regius Professor of Greek in the University of Cambridge. After leaving Lady Margaret Hall, Oxford, she trained as an elementary school teacher, and subsequently became a member of the Borough of Cambridge Education Committee. Her greatest work, however, was directed to the relief of suffering arising from war and untoward economic conditions. During the second Balkan War she visited Macedonia on behalf of the Macedonian Relief Fund, and towards the end of the late war she became one of the founders of the Fight-the-Famine Council. It was in this organisation that the Save the Children Fund had its genesis—a movement which has been the means of disbursing over £4,000,000 for the relief of child suffering. She it was also who drafted the Declaration of Geneva, laying down the minimal obligations of society to the child, which was adopted by the Assembly of the League of Nations in 1924. With the work of the League she was actively associated as an assessor to the Committee for Child Protection.

Appointments.

DIBLE, J. H., M.B., Ch.B. Glasg., M.R.C.P. Lond., has been appointed to the George Holt Chair of Pathology, University of Liverpool.

YORKE, WARRINGTON, M.D., Ch.B. Liverp., to the Alfred Jones Chair of Tropical Medicine, University of Liverpool.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, Lake Hospital and Darnton House.—Res. Asst. M.O. £150.
Barbados General Hospital.—Jun. Res. S. £250.
Birmingham, Children's Hospital.—Cas. O. At rate of £250.
Blackburn County Borough.—Asst. M.O.H. £600.
Burton, Devonshire Hospital.—Asst. H.P. At rate of £150.
Cambridge University, Pathological Laboratory.—John Lucas Walker Studentship. £300.
Cancer Hospital, Fulham-road, S.W.—Radium Officer. £500. Also Asst. S.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Central London, Throat, Nose and Ear Hospital.—Two Hon. Asst. Out-patient Registrars.
City of London Hospital for Diseases of the Heart, &c., Victoria Park, E.—H.P. At rate of £100.
Colchester, Essex County Hospital.—H.P. £150.
Croydon General Hospital.—Hon. Jun. Physician.
Derbyshire Education Committee.—Asst. School M.O. £600.
Dumfries, Crighton Royal Mental Hospital.—Clin. Pathologist. £400.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
Golden-square, Throat, Nose and Ear Hospital, W.—Hon. Surgeon.
Hull, Infectious Diseases Hospital.—Res. M.O. £550.
Hull, Royal Infirmary.—H.S. At rate of £150.
Indian Medical Service.—Recruitment of European Officers.
Kingston and District Hospital.—Third Asst. Res. M.O. At rate of £250.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. £150.
Manchester, Ancoats Hospital.—Asst. Surg. O. 10*s.* 6*d.* per attendance.
Manchester Northern Hospital for Women, &c., Park-place, Cheetham Hill-road.—Hon. Asst. Gynæcological Surgeon.
Manchester Royal Infirmary.—Medical Registrar. £150.
National Hospital, Queen-square, W.C.—Res. M.O. £200
Nottingham Children's Hospital.—Res. H.S. At rate of £150.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg.O. Also H.S. At rate of £150 and £100 respectively.
Pontypridd Urban District Council.—M.O.H., &c. £800.
Princess Louise Kensington Hospital for Children, N. Kensington. Hon. Asst. P.
Royal Army Medical Corps.—Twenty-five Commissions.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. M.O. £500.
Salford, City Education Committee.—Asst. School M.O. £600.
St. Bartholomew's Hospital. Dental Surgeon.
St. Thomas's Hospital.—Obst. P. Also Obst. P. in Charge of Out-patients.
Stafford, Staffordshire General Infirmary.—H.S. and H.P. At rate of £200 and £150 respectively.
Stockport Infirmary.—H.P. and H.S. Each £175.
Sudan Medical Service.—M.O. LE.780.
Swansea County Borough.—Asst. M.O. £600.
Wandsworth Metropolitan Borough.—Asst. Tuberculosis Officer, £500.
West London Hospital, Hammersmith-road, W.—Aural and Ophth. H.S. and Res. Asst. Cas. O. At rate of £100.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Parbold (Lancs.).

A vacancy for a Medical Referee under the Workmen's Compensation Act for the Kilmarnock District (Sheriffdom of Ayr) and the Isle of Arran is announced. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, not later than Jan. 8th, 1929.

Births, Marriages, and Deaths.

BIRTHS.

LISTER.—On Dec. 16th, at Devonshire-place, W., the wife of Arthur Reginald Lister, *M.C.*, F.R.C.S., of Bootham, York, of a daughter.

MARRIAGES.

DAVENPORT—MAYFIELD.—On Dec. 6th, at St. Bartholomew the Great, E.C., Robert Cecil Davenport, F.R.C.S., to Helen Elizabeth Mayfield, M.R.C.S., L.R.C.P., eldest daughter of Mr. P. Mayfield and the late Mrs. Mayfield, of Hull.

DRU DRURY—HEWLINS CATLING.—On Dec. 12th, at St. Saviour's Church, Hampstead, Graham Dru Drury, M.R.C.S., L.R.C.P., to Helen Florence Hewlins Catling, youngest daughter of Mr. and Mrs. C. Brian Catling, of West Southbourne, Hants.

JOHNSON—PHILLIMORE.—On Dec. 8th, at All Souls', Hampstead, Dr. Bernard R. M. Johnson to Olive Mary, only daughter of William and Violet Phillimore, of Hampstead.

KINGSFORD—GILFILLAN.—On Dec. 13th, at Hampstead, Arthur Beresford Kingsford, M.D., to Esther Mary, sixth daughter of the late Rev. Thos. Gilfillan.

ROQUES—MILLINGTON.—On Dec. 15th, at All Souls, Langham-place, London, by the Rev. Alfred Pugh, assisted by the Rev. Arthur Buxton, Rector of the parish, Frederick Roques, to Doris Mary, younger daughter of the late the Rev. T. E. Millington, M.A., and Mrs. Millington, of Bedford.

DEATHS.

CASS.—On Dec. 12th, suddenly, whilst out shooting near Bettws-y-Coed, North Wales, Edward Eden Cass, M.B., B.S., of Goole, Yorkshire.

COLEY.—On Dec. 13th, at Eldon-square, Newcastle-on-Tyne, Frederic Collins Coley, M.D., J.P., aged 73 years.

PRIESTLEY.—On Dec. 15th, Joseph Priestley, B.A., M.D., D.P.H., late M.O.H., Lambeth.

WHITE.—On Dec. 11th, at Albany-villas, Hove, Charles Percival White, M.B. Camb., M.V.O., aged 67.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HEALTH OF CYPRUS.

THE island of Cyprus, situated in the Eastern Mediterranean, is about 140 miles in greatest length from east to west, and about 40 miles in greatest breadth from north to south. In 1878 the island passed under the administration of Great Britain, and, on the outbreak of war with Turkey in 1914, was annexed to the British Crown. In 1925, Letters Patent giving to Cyprus the status and name of a Colony, and constituting the office of Governor of the Colony in place of that of High Commissioner, were passed under the Great Seal.

According to the official report on the affairs of the island for the year 1927, recently issued through the Colonial Office, the estimated population on Dec. 31st was about 339,500, as against 310,709 shown in the census return taken in 1921. The total number of births registered in the island during the year was 8586, being 25·2 per 1000 of the population. The deaths numbered 5328, equivalent to 15·6 per 1000. The bulk of the inhabitants are of the Orthodox Greek-Christian faith, and belong to the Antecephalous Church of Cyprus. Of the remainder, some 65,000, or approximately one-fifth of the population, are Moslems. There is also an Armenian community, which tends steadily to increase, and a distinct though not numerous Latin colony. Except for the endemic prevalence of malarial fever, the climate is healthy and temperate, and with proper precautions there should be no difficulty in enjoying complete immunity from this disease. The heat and humidity in certain localities during the summer months impose a certain strain, but access to the hills is easily practicable within a very short distance. The climate during the winter might almost be described as ideal, combining as it does invigorating cold with clear sunshine. The continued dullness of more northern climes is seldom experienced, and a rainy day is invariably succeeded by a cloudless sky.

Epidemic Disease.

Public health in 1927 was satisfactory. Cyprus remained free from plague, typhus, and other virulent diseases common in the Near East. There was also no case of rabies during the year. The prevailing diseases, other than malaria and phthisis, were those of the digestive and respiratory systems, influenza, and dysentery. In one village there was a serious outbreak of enteric attributed to a contaminated water-supply, but the general incidence of this disease has of recent years been greatly diminished. There was an increase in the number of trachoma cases; but the increase would seem to be apparent rather than actual and due to the opening of special eye dispensaries. Phthisis, according to the official figures, would appear to have been slightly more prevalent than in 1926. Owing, however, to the extreme reluctance of private practitioners to report cases of phthisis, its actual incidence is hard to determine.

Malaria.

Although climatic conditions were more favourable in 1927, 500 more cases of malaria were treated than in the previous year. This may to a great extent be attributed to the opening of fresh dispensaries and to the growing readiness of the people to apply for medical aid. It is interesting to observe that whereas in 1913 out of 30,458 patients 24·1 per cent. had malaria, in 1927 out of 58,456 patients 16·19 per cent. had malaria; and that, whilst in 1913, 21·82 per cent. of 9178 children who were examined had enlarged spleens, in 1927 42,455 children were examined and the spleen-rate was 12·9 per cent. The antimalaria works carried out in 1927 include the cleaning of streams and drains, the draining and reclaiming of marshes, screening or filling in of wells, and the stocking of tanks and wells with fish. House-to-house inspections were made by the sanitary inspectors, large quantities of larvicide were used, and quinine was distributed free of charge to the population. Lectures, accompanied by lantern slides, were given in several places with a view to arousing the intelligent coöperation of the people in antimalaria work.

The infant mortality-rate in Cyprus is unduly high. This is attributed in part to malaria, in part to inherited syphilis, and in part to want of proper care and attention. An infant welfare centre was opened in Nicosia, and a nurse, specially trained in child welfare work, visited the centre twice weekly and gave advice and treatment. At the end of the year a venereal disease clinic was opened in Nicosia, and a specialist appointed.

Hospitals.

In the autumn of 1927 Dr. A. E. Horn, C.M.G., visited the island in order to report on the working of the medical department. During the year there were two hospitals and a sanatorium, maintained by the Government, in operation, together with four Government-aided hospitals, 27 rural dispensaries, and seven branch dispensaries. Each rural dispensary is the headquarters of a rural medical officer, who works among the village population. The duties of these officers are sanitary as well as medical, and they are engaged in particular in the campaign against malaria.

The total number of beds in the Government hospitals is 223, and almost 4000 patients were admitted during 1927, 721 surgical operations being performed. At the close of the year 130 inmates were detained at the lunatic asylum, as against 118 at its commencement; 19 persons were discharged as cured, and ten died; the number of new cases admitted was 41. The accommodation of the institution was ample. Lunacy in Cyprus is generally of a mild form, and restraint had to be resorted to in three cases only.

Leprosy.

The number of lepers admitted to the Leper Farm, which is run on the lines of a village, with its own church, mosque, and schools, was five, and the number of lepers detained at the close of the year amounted to 81. There were six deaths, all of which were advanced cases of the disease. Some of the inmates have been treated with gynocardate of soda, leprol, mogrol, and preparations of antimony, with some success. In nodular cases disappearance of the nodules and growth of the eyebrows has been noted. It is satisfactory to record that the disease has recurred in none of the five cases released on parole. The number of children at the end of the year in the home for the healthy children of lepers was nine, all of whom remained free from any sign of the disease.

Meteorology.

At Nicosia the absolute mean temperature for 1927 was 66·5° F.; the mean maximum was 79·2° F., and the mean minimum 55·9° F. Rainfall for the last ten years has averaged 20·33 inches per annum; the mean for 1927 was 16·81 inches, as compared with 28·19 inches for 1926. Twenty-two earthquake shocks were recorded during 1927; they were all felt in Limasol. Two of the shocks were classified as severe, and occasioned a certain amount of damage to buildings. There are numerous resorts in the hills at altitudes varying from 6000 to 2000 feet, such as Mount Troödos or Kantara, where the summer season, lasting from June to the end of September, can be passed in eminently healthy surroundings and without discomfort or inconvenience. On Troödos during the 1927 season the maximum shade temperature was 91° F. and the minimum 48° F.

THE SEASONAL INCIDENCE OF THE PLAGUE.

IN his scholarly little handbook, "The Boar's Head Tavern in Eastcheap,"[1] Dr. Kenneth Rogers gives (p. 49) some interesting figures of the monthly incidence of the last five epidemics of plague. With the help of the Rev. H. J. Fynes-Clinton, who contributes a foreword to the book, he has investigated the old registers of the city parishes of St. Michael, Crooked Lane, and St. Magnus, and has constructed a table of great epidemiological interest. The carrier of the disease, the rat flea, was especially abundant in the summer months, and the mortality as shown by the burial lists, from being negligible in June, showed a sharp rise culminating in September and sinking again almost to nothing in December. The average September figure for the two parishes in the last five plague years was over 72; the figures for the winter months were under four. Another unexpected result is that the final outburst, that of 1665, was by no means the deadliest. The September burials were 69 in that year, but in 1603 they were 89, and in 1563 they were 92. Attention has probably been focused on the "Great Plague" partly because it was the last and partly because of the unique description of it written by Pepys in his diary.

THE CONTINENTAL ANGLO-AMERICAN MEDICAL DIRECTORY.

WE have received from Dr. B. Sherwood-Dunn, hon. secretary and treasurer of the Continental Anglo-American Medical Society, a copy of a revised directory. This list of Anglo-American doctors practising in continental Europe or Northern Africa was first issued in 1889 and was kept going year by year by Dr. Thomas Linn, who died last July. The list is intended to serve as a bond of union between practitioners, and should help to circumvent the boycott of the English-speaking doctor in the foreign resort by hotel managers and others who naturally prefer to recommend home produce. The list will be supplied free of charge to anyone who applies to Dr. Sherwood-Dunn at 54, Boulevard Victor-Hugo, Nice, A.-M., France.

[1] The Homeland Association, Ltd., 37, Maiden-lane, Covent Garden, W.C. 1928. Pp. 58. 4*s.* 6*d.*

"BAY MOUNT," PAIGNTON.

Dr. Stanford Park's sixth annual report covers the experience of the year 1927 at the home for alcoholism, drug habits, and neurasthenia, of which he is resident medical superintendent. During the year 43 new patients were admitted for treatment; 6 patients remained over from 1926. Of the total number 36 were males and 13 females. There were 23 cases of alcoholism, 4 cases of alcoholism plus marked neurasthenia, 14 drug cases (5 of which also took alcohol to excess), and two cases of neurasthenia without any history of drink or drugs. No case of delirium tremens occurred, but there were two severe cases of alcoholic neuritis, and two of cirrhosis of the liver. The results obtained were good and at times even remarkable. Dr. Park remarks that there is no apparent reason why practically all patients, who are not mentally affected, should not be cured by the treatment provided. There is sometimes the difficulty that patients at the end of three or four weeks' treatment feel so well as to think they are cured, and it may be difficult to persuade them to complete their cure. The unwilling patient remains the most difficult problem. Dr. Park distinguishes three types: (1) the man who denies that he drinks to excess, or that he drinks at all; (2) the man who says he can stop when he likes, and that treatment is unnecessary; (3) the man who frankly says he likes drink and won't give it up. If they are persuaded to submit to treatment they always require much coaxing and exhortation. Nevertheless an apparently hopeless case is sometimes cured. Occupation with work or play is regarded as most important, and patients are urged to occupy their time, while will-power and self-confidence are built up by appropriate methods. Dr. Park concludes his report with a plea to physicians and patients' relations to send cases early. To delay, in the hope that the patient will improve or be cured at home, is mistaken kindness.

APPOINTMENT DIARIES FOR DENTAL SURGEONS.

THE Diary of Appointments for Dental Surgeons has just been issued by the Dental Manufacturing Company at the price of 6*s.* 6*d.* or, interleaved with blotting-paper, at 8*s.* It is a convenient and handy book with appointments for each day at half-hourly intervals. A separate address book is included which slips into a pocket in the cover. We have also received a similar appointment book from Messrs. John Bale, Sons, and Danielsson. This is published at the price of 7*s.* 6*d.* or, interleaved with blotting-paper, at 9*s.* 6*d.* This also provides for half-hourly appointments and contains information on the times of dentition, motor licences, and the agreed scale of charges for members of approved societies. Another useful feature is a complete list of members of the British Dental Association arranged according to the localities where they practise. Both of these diaries are well suited for their purpose.

THE MODIFICATION OF THE ŒSTRAL CYCLE IN RATS.

IT has been stated (Lyman, *Amer. Jour. Phys.*, 1928, lxxxv., 414) that adrenalectomy brings about the suppression of the œstral cycle in rats. In a series of experiments[1] made by Del Castillo on female rats, the extirpation of the adrenals is shown to have no greater effect upon the œstral cycles of the animals than does a similar operation in which these glands are left intact. None of the animals died as a result of the operation. The onset of puberty, when young rats are adrenalectomised, is not affected. These results are in agreement with those of Zondek (*Klin. Woch.*, 1927, vi., 685) on white mice, and it is probable that Lyman's results are to be attributed to the results of operation—14 out of 17 animals died within a period of 27 days following operation.

In two brief communications which appear in the same journal (pp. 1404, 1405) Del Castillo shows that removal of the spleen and pineal body respectively produces no effect other than that attributed to operative trauma; and he also confirms the observations of Buschke, Zondek, and Berman (*Klin. Woch.*, 1927, vi., 683) that the appearance of œstrus is temporarily inhibited by subcutaneous administration of thallium. Sodium fluoride and irradiation with ultra-violet light produce a similar result; but in these experiments the cycles did not reappear and the rats remained in a condition of permanent dioestrus.

THE address of the North Kensington Welfare Centre, on whose annual report we commented last week is 12, Telford-road, Ladbroke-grove, London, W. 10.

Corrigendum.—In Mr. W. H. Ogilvie's article on "A Pneumatic Bone Operating Set" (THE LANCET, Dec. 8th, p. 1177), the pressure in the cylinders of compressed air should read 120 *atmospheres*, not pounds.

[1] Le cycle œstral du rat normal et décapsulé. By E.-B Del Castillo. Compt. rend. de la Soc. de Biol., 1928, xcix., 1403.

THE KING'S ILLNESS.

OFFICIAL BULLETINS.

(*Continued from p. 1276.*)

THE following is the text of the official bulletins which have been issued during the King's illness by Sir Stanley Hewett and Lord Dawson.

THURSDAY, DEC. 13TH. 10.45 A.M.

The King has had some sleep. The local condition is satisfactory. The weakness and toxæmia are considerable, but the pulse is steady and His Majesty is not losing ground. (Signed also by Sir Hugh Rigby.)

8.15 P.M. Though the King is still suffering from exhaustion, there is a slight improvement in His Majesty's condition this evening. The local condition remains satisfactory. (Signed also by Sir Hugh Rigby.)

FRIDAY, DEC. 14TH. 10.30 A.M.

The slight improvement in the King's condition noted last evening is maintained. Any progress must be slow and difficult. (Signed also by Sir Hugh Rigby.)

8.15 P.M. The King has had a somewhat disturbed day, and the general condition is not quite so satisfactory. The pulse, however, remains steady. (Signed also by Sir Hugh Rigby.)

SATURDAY, DEC. 15TH. 11 A.M.

The King has had several hours' sleep. The local condition is so far satisfactory. There is no increase in the exhaustion and the pulse remains steady. (Signed also by Sir Hugh Rigby.)

7.20 P.M. His Majesty has had a quiet day, with some sleep. Though the pulse remains steady and the fever is now moderate, the exhaustion persists. It had been decided to employ ray therapy as part of the treatment. (Signed also by Sir Hugh Rigby, Dr. Robert Stanton Woods, and Dr. Frank Howitt.)

SUNDAY, DEC. 16TH. 11 A.M.

In spite of a restless night His Majesty's general condition has slightly improved. (Signed also by Sir Hugh Rigby.)

8 P.M. The King has had a quiet day and the improvement in His Majesty's condition noted this morning has been maintained. (Signed also by Sir Hugh Rigby.)

MONDAY, DEC. 17TH 10.45 A.M.

The King has had a fair night with some natural sleep towards morning. The slight improvement in His Majesty's condition noted yesterday continues. (Signed also by Sir Hugh Rigby.)

8.15 P.M. The King has this afternoon been somewhat restless, and the progress recently noted has not been continued during the last few hours. (Signed also by Sir Hugh Rigby.)

TUESDAY, DEC. 18TH. 11 A.M.

In spite of the King having passed a disturbed night there is a slight improvement in both the general and local conditions. (Signed also by Sir Hugh Rigby.)

8.10 P.M. The King has passed a quiet day, and the progress noted this morning has continued. (Signed also by Sir Hugh Rigby.)

WEDNESDAY, DEC. 19TH. 11 A.M.

The King has had a restful night. The slight improvement noted yesterday continues. (Signed also by Sir Hugh Rigby.)

WORK OF THE MIDDLESEX HOSPITAL.—The report for the year 1927 shows that the average weekly cost of each in-patient was £4 16*s.* 8*d.*, as compared with £5 0*s.* 1*d.* for the preceding year. The fall is due mainly to the increased bed occupancy and to the greater number of patients treated owing to the annexe being in use for the whole year. There has again been a heavy increase in out-patients—49,018, against 45,457. The new cases are 41 per cent., and the attendances 50 per cent. greater than in 1922. Attention is directed to the importance of endowing the professorial chairs in the University of London attached to the hospital's medical school. Of the seven chairs four are still unendowed